

Scenarios and strategy for the Engagement of Actors in the Agriculture and Coastal Fisheries Sectors for Biodiversity Conservation in Fiji

Situation Analysis to Identify Scenarios for Future Commitments of Economic Actors in Favour of Biodiversity in Fiji

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Note:

All monetary units in this report refer to Fiji Dollars. At the time of writing USD1:FJD2.20



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Photos: Fiji petrel *Pseudobulweria macgillivrayi* and Fiji tree frog *Platymantis vitiensis*

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
AFD	French Development Agency
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species
DPSIR	Driver, Pressure, State, Impact & Response
EMA	Environmental Management Act
FCPF	Forest Carbon Partnership Facility
FLMMA	Fiji Locally Managed Marine Area Network
FNU	Fiji National University
GDP	Gross Domestic Product
IDA	Inside Demarcated Areas
IUCN	International Union for the Conservation of Nature
MMA	Marine Managed Areas
MPA	Marine Protected Area
NBSAP	National Biodiversity Strategy and Action Plan
NBTA	National Biodiversity Threat Assessment
NGO	Non-Government Organisation
PHAMA Plus	Pacific Horticultural and Agricultural Market Access Program
PIFON	Pacific Islands Farmers Organisation Network
POETCom	Pacific Organic and Ethical Trade Community
REDD-Plus	Reducing Emissions from Deforestation and Forest Degradation
SLM	Sustainable Land Management
SPC	Pacific Community
SPREP	Pacific Regional Environment Programme
TRTC	Tutu Rural Training Centre
USP	University of the South Pacific
WWF	World Wide Fund for Nature

EXECUTIVE SUMMARY

Against the backdrop of the global biodiversity crisis, BIODEV2030 is a multi-country initiative to facilitate the mainstreaming of biodiversity conservation into key economic sectors in sixteen pilot countries through the development of sectoral voluntary commitments. At the country-level the project uses an adaptation of the DPSIR¹ framework that is structured by diagnostic, dialogue and dissemination phases ('3D approach'). The 'diagnostic phase' in Fiji was centred around a National Biodiversity Threat Assessment, which established that 177 species are categorised as threatened with extinction according to the IUCN Red List across the taxa Mammals, Plants, Birds, Terrestrial Molluscs, Reptiles, Amphibians, Freshwater Fish, and Marine Fish. Agriculture was identified as the economic sector posing the largest threat to Fiji's terrestrial biodiversity owing to its impact on native forests which are endemic biodiversity 'hotspots', while fisheries was the economic sector posing the greatest threat to marine biodiversity in Fiji.

This study (Study 2) dives deeper into the two priority sectors and focuses on sub-sectors and key threats to biodiversity associated with them; i.e. kava production under the Temporary Crops sub-sector; and overfishing in the Coastal Fisheries sub-sector. The study conducts a situation analysis of each of these 'sub-sectors', which includes the mapping of stakeholders, and a description of the 'sub-sectors' impact on biodiversity. The study looks at models of best practice, as well as ways to strengthen the transformative role of each 'sub-sectors' governance framework. It recommends scenarios for possible voluntary commitments by different stakeholders and concludes with a stakeholder engagement and mobilisation strategy to guide the national dialogue phase. The study employs a mixed method of data collection that includes document sourcing, desktop research and analysis, consultations with senior government officials and other key stakeholders with particular attention paid to stakeholder groupings at different points in the kava and coastal fisheries value chains. The consultations allow the profiling and initiation of discussions with relevant industry players and enablers about the biodiversity conservation challenges linked to the industry/sub-sector. The chosen approach enhances the securing of voluntary commitments during the project's dialogue phase that will follow.

With respect to the **kava industry**, a key challenge for biodiversity conservation is the current farming system of shifting cultivation that involves clearance of native forest habitat. With growing market demand and soaring prices, the kava industry has been booming in recent years, with the area of land under production rapidly increasing. While the bulk of production currently meets the needs of domestic consumers (90%), it is anticipated that the export market will see rapid and sustained growth going forward. There is, however, an urgent need to address the ecological impacts of the industry as part of efforts to enable and sustain its growth.

There are many players that participate in the industry's value chain, and a general lack of awareness of the industry's environmental impact presents a challenge to introducing changes to currently practiced farming systems. While there is some localised experimentation with adapted and alternative farming systems designed to mitigate the environmental impacts, low levels of resourcing reflect an under-appreciation of the seriousness and urgency of the issue. Trials using shade cloth, agro-forestry and inter-cropping techniques using rapidly growing nitrogen fixing, shade trees in combination with macuna bean ground covers and vetiver grass hedge rows are showing that kava can be grown successfully with similar levels of productivity on open land. In this regard a 'Low Grow' campaign promoting alternative farming systems, similar to the one that proved successful in Pohnpei, is recommended. For farmers that are reluctant to move their cultivation away from forests, further research and experimentation is needed to evaluate and adapt forest-based cultivation systems to reduce their impact of forest biodiversity, and ideally become 'biodiversity-positive'. Scenarios for strategic interventions aimed at laying the ground for 'voluntary commitments' to address the ecological impact of kava production include:

1 Driver, Pressure, State, Impact & Response

Strategic Actions and Entry Points to address the ecological impact of Kava production

Awareness

Strategic Action 1: Fund, design and implement evidence-based advocacy campaigns targeting the Kava sector

Strategic Action 2: Train and equip extension officers from lead and support agencies to ensure effective and consistent messaging

Strategic Action 3: Incorporate biodiversity awareness programs into Kava industry, Provincial Office, District and Village plans

Research

Strategic Action 4: Establish a multi-agency technical working group of GIS specialists under the auspices of the National Kava Coordinating Committee and develop a monitoring system using remote satellite sensing of forest cover

Strategic Action 5: Establish dedicated research programmes in collaboration with academic institutions, conservation organisations, regional organisations and development partners

Strategic Action 6: Increase levels of agronomic research on ecologically sustainable alternative kava farming models and extend current trials and demonstrations in Taveuni to hotspot provinces and islands

Strategic Action 7: Conduct a market-based feasibility study for 'eco-friendly' kava certification

Pilot projects

Strategic Action 8: Implement traditional sustainable farming models for kava farming

Training

Strategic Action 9: Design and implement train-the-trainer programs for ecologically sustainable kava farming

Land Tenure

Strategic Action 10: Implement environmental screening for agricultural lease applications for the sub-category 'Planting Lease'

Strategic Action 11: Investigate applicability of EMA Schedule 2 listed activities to large kava farm commercial developments and apply EIA regulations if applicable

Financing for commercial kava production

Strategic Action 12: Strengthen processes for environmental screening of agricultural loan applications to the Fiji Development Bank for kava farming

Strategic Action 13: Strengthen the monitoring and enforcement of loan conditions relating to land-husbandry

Policy and Legislation

Strategic Action 14: Finalise review of the Kava Bill and fast-track its enactment

Strategic Action 15: Strengthen EMA 2005 for EIA in Agriculture

Strategic Action 16: Enable and support "other effective area-based conservation measures (OECM)" on sites for positive and sustained long term conservation of biodiversity

Incentives

Strategic Action 17: Use existing kava farming incentive programmes as a means to leverage commitments from farmers and land owners

Strategic Action 18: Use the REDD+ initiative under the emission reduction program to incentivise farmers, restore forest and farm on low land using sustainable agriculture practices

Land use Planning

Strategic Action 19: Strengthen recognition of Key Biodiversity Areas in agricultural land use planning including processes for lease and loan applications

Coastal fisheries are important in the development of most coastal fishing households and communities in Fiji. About 42.3% of the population lives in rural areas and depends on small-scale commercial and subsistence fishing for both livelihood and over 75% of dietary protein. With the high demand for coastal fisheries resources, coupled with the use of destructive fishing practices and limited capacity in coastal fisheries management, the majority of coastal fisheries resources are overexploited, meaning that fish abundance and sizes have decreased dramatically.

This assessment finds that the current fisheries management efforts are limited in their capacity to reverse the decline in coastal fisheries resources and protect marine biodiversity from the threat of overfishing. Strategic interventions across six thematic areas are proposed to address the gaps in coastal fisheries management, and to guide the development of voluntary commitments at all levels (national, communities and specific groups within the coastal fisheries sub-sectors) to ensure the ecological sustainability of the sub-sector. Ten strategic interventions and proposals for voluntary commitments are recommended to frame the 'national dialogue' phase of the BIODEV2030 project in Fiji.

Strategic interventions and entry points to address the ecological impact of coastal fisheries

Traditional and Customary Management practices

Strategic Action 1: Implement community-based fisheries management practices, such as the traditional practice of "TABU", to complement existing national fisheries management programs

Governance and Fisheries Management Structures

Strategic Action 2: Establish national, regional and sub-regional Fishers Associations with a clear mandate to represent the interest of coastal fishers and to promote ecological sustainability

Research

Strategic Action 3: Conduct applied research and develop a rapid assessment protocol to guide coastal fisheries development

Coastal fisheries management tools

Strategic Action 4: Develop and implement new and additional tools to complement existing coastal fisheries management tools

Compliance and Enforcement

Strategic Action 5: Introduce a cash incentive for community fish wardens and seek to more actively involve municipal market staff and traders in management and enforcement

Economic Incentives and Financing

Strategic Action 6: Introduce a system of eco-labelling and catch certification

Strategic Action 7: Attach sustainability conditions to fishing loans offered by the Fiji Development Bank and other government assistance programmes.

Alternative/Enhanced Livelihood Options

Strategic Action 8: Introduce value-adding and alternative livelihood opportunities for coastal fishing communities

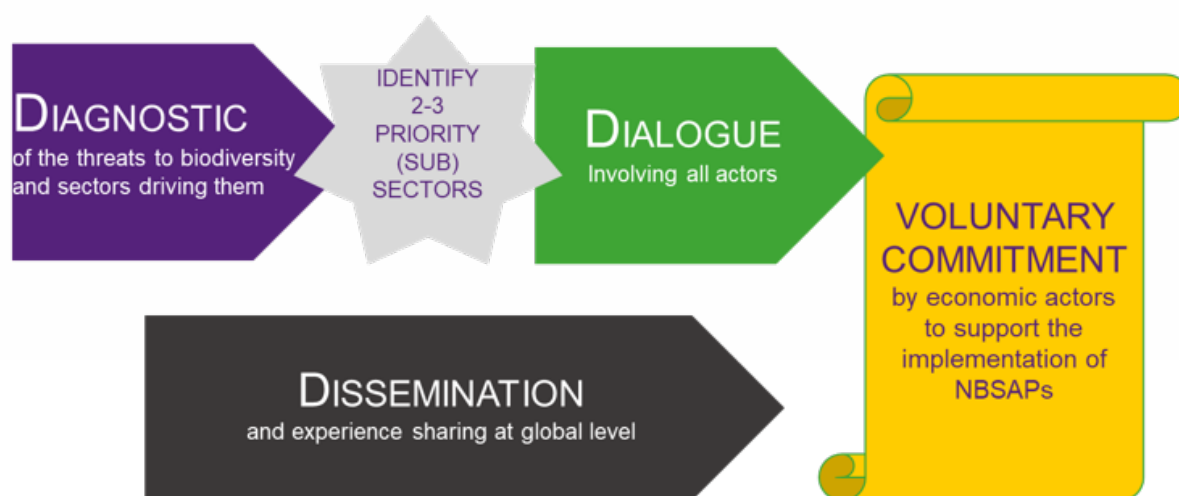
Policy and Legislation

Strategic Action 9: Revise and enact the Coastal Fisheries Management Bill

Strategic Action 10: Develop and adopt a coastal fisheries management guideline

1. Introduction

Against the backdrop of the global biodiversity crisis, BIODDEV2030 is a multi-country initiative that aims to facilitate the mainstreaming of biodiversity conservation into key economic sectors through the development of sectoral voluntary commitments in sixteen pilot countries. The three-year initiative is funded by the French Development Agency (AFD), coordinated by Expertise France and implemented by IUCN and WWF. In each country, the project supports a constructive dialogue, based on a scientific and a diagnostic assessment of national and sectoral threats to biodiversity based on available data. Figure 1 provides a simplified overview of the '3D process' followed by BIODDEV2030 at the country level.



In support of and in close partnership with high-level national authorities and existing stakeholder platforms

Figure 1 – Simplified version of the 3D process followed by BIODDEV

In Fiji, the BIODDEV2030 project is implemented by IUCN in close collaboration with the Ministry of Environment.

The project began in 2021 with a national diagnostic analysis in the form of a National Biodiversity Threat Assessment (NBTA).² This assessment was undertaken to (1) determine the state of biodiversity in Fiji, (2) identify, classify and rank the threats from anthropogenic activities to Fiji's biodiversity, and (3) examine the economic sectors associated with the direct threats to Fiji's biodiversity for engagement with the BIODDEV2030 Project in Fiji. Section 1.2 provides a summary of the outcomes of the National Biodiversity Threat Assessment.

The NBTA concluded that the agriculture and fisheries sectors posed the biggest threats to Fiji's terrestrial and marine biodiversity, and were therefore selected to be the focal economic sectors for the project to work with in facilitating voluntary commitments. The selection of these sectors was validated by biodiversity stakeholders during a national stakeholder workshop on 17 August 2021. The NBTA went further to identify 'biological resource use' as the biggest driver of biodiversity loss in the coastal fisheries sector and 'agricultural expansion for cash crops' as the biggest driver in the agriculture sector.

This report documents the findings of the second study commissioned by the project. The objectives

² O'Brien M., Moko N., Watling D., Segaidina M. and Morrison C. 2021. National Biodiversity Threat Assessment. Ranking major threats impacting on Fiji's biodiversity. BIODDEV2030.

of the three months study were to dive deeper into the selected sub-sectors by conducting situation analyses, including stock take of the respective sector frameworks, stakeholder mapping, direct and indirect threats to biodiversity and drivers of loss across the sectors, and to identify hot spot zones/ areas under greatest threat, best practices, incentives and disincentives, and to develop scenarios and concept notes for possible voluntary biodiversity commitments by stakeholders in the sectors³.

The results of the study will feed into the final phase of the project which is the national dialogue process aimed at socialising the issues, securing voluntary commitments, and putting in place measures to ensure that they are effectively mainstreamed, monitored and reported on. Key to this is establishing strong linkages with the National Biodiversity Strategy and Action Plan for Fiji (NBSAP 2020 – 2025) under the umbrella of the post-2020 global biodiversity framework. The project is scheduled to complete by December 2022.

1.1. Methodology

i. Conceptual Framework

The conceptual framework used for the assessment was provided by the IUCN BIODEV2030 project team and is adapted from the DPSIR⁴ Framework, which is used to define cause and effect relationships among the drivers (human needs), pressures (human activities), environmental state (negative trends), impacts (cascading social, environmental or economic changes), and responses (institutional policy and programs to improve conservation). The aim is to understand the real drivers which are sometimes unique to the local situation and then to identify and implement the most effective responses to remove or at least reduce the pressure.

ii. Data Collection

Data was collected through a combination of document sourcing, desktop research and analysis, consultations with senior government officials and other key stakeholders using a semi-structured interview schedule with particular attention paid to stakeholder groupings at different points of the kava and coastal fisheries value chains. Data collection included two half-day focus group meetings for mixed stakeholders from each of the sub-sectors. It also included the facilitation of a workshop on coastal fisheries management for community members in Nadiri village on the Coral Coast, during the launch of their Marine Biodiversity Park established in partnership with the Ministry of Environment. In addition, the consultants participated in a workshop on forest certification held by the Ministry of Forests, and they attended a seminar concerning a review of Fiji's EIA Guideline. Annex 1 provides a listing of the stakeholders consulted.

1.2. Outcomes of the National Biodiversity Threat Assessment

Figure 2 provides an overview of the state of Fiji's biodiversity as reported in the National Biodiversity Threat Assessment⁵. From this overview it is apparent that there are 177 species that are listed on the IUCN Red List as 'threatened'; i.e. categorised as either 'critically endangered', 'endangered', or 'vulnerable'. Figure 3 gives an overview of the breakdown across taxa. The vast majority of these species are terrestrial (144) although some of the threatened birds are seabirds, such as the critically endangered Fiji Petrel of which there are fewer than 50 individuals remaining⁶.

3 Terms of Reference. IUCN. 2022. Scenarios and strategy for the Engagement of Actors of the Agriculture and Coastal Fisheries Sectors for Biodiversity Conservation in Fiji.









4 Driver, Pressure, State, Impact & Response

5 O'Brien et al, 2021. op cit.

6 Nature Fiji Mareqeti Viti, 2022. Why are Fiji's forests important? Presentation delivered to the Workshop on Forest Management and Certification. Holiday Inn. 29/03/2022

FJI NATIONAL BIODIVERSITY THREAT ASSESSMENT OUTLOOK

The BIODEV2030 National Biodiversity Threat Assessment for Fiji provides the following information concerning the state of Fiji's biodiversity.

 <p>Mammals 11 species. One bat species listed as 'critically endangered'; two are listed as 'endangered'; one is listed as 'vulnerable'; and one listed as 'near threatened'. Populations of these five threatened bat species are all assessed as declining.</p>	 <p>Birds (Avifauna) 108 bird species breed or are regular migrants to Fiji or Fiji waters. 36 of these are country endemic species. Two species (Red-Throated Lorikeet; Fiji Petrel) are listed as 'critically endangered'. Four species are listed as 'endangered', and nine species are listed as 'vulnerable'. Another 14 species are listed as 'near threatened'. The populations of 25 of these 29 listed species are assessed as 'declining'.</p>
 <p>Terrestrial Molluscs There are over 230 molluscs recorded from Fiji of these 78% are endemic to Fiji. 20 are listed as 'critically endangered'; 20 as 'endangered'; 25 as 'vulnerable'; and seven as 'near threatened'. Trends in population numbers are unknown, but most are assumed to be declining.</p>	 <p>Freshwater Fish A total of 166 species of freshwater fish have been recorded for Fiji of which 13 are endemic species. No freshwater fish species are currently listed as threatened by IUCN while 14 species are listed as Data Deficient.</p>
 <p>Amphibians There are only two endemic species of frog in Fiji (Fiji ground frog and Fiji tree frog) and both are listed as 'near threatened' with populations declining.</p>	 <p>Marine Fish Over 2000 species of fish are recorded from Fiji's coastal and marine areas. One marine fish (Whitetip shark) is listed as 'critically endangered'; 10 species (mostly sharks and rays) are 'endangered'; 22 species are 'vulnerable'; and nine are 'near-threatened'. All populations of the above 'threatened' or 'near-threatened' species are declining.</p>
 <p>Reptiles 33 species of terrestrial reptiles in Fiji including five species of (terrestrial dwelling) snake (including the banded sea krait), five iguana species, 14 skinks and 10 geckoes. Two reptiles (Fiji crested iguana; Ono-i-Lau ground skink) are listed as 'critically endangered'; seven are 'endangered'; three are 'vulnerable' and one is 'near-threatened'. Populations of 10 of the above 13 listed reptiles are known to be declining.</p>	 <p>Plants No information on the total number of plants across all biomes but it is reported that 1518 species of plants are found in Fiji's forests of which 50.1% are endemic. 17 are listed as 'critically endangered'; 16 as 'endangered'; 15 as 'vulnerable'; and seven as 'near-threatened'. All populations of the above threatened or near-threatened species are either unknown or declining.</p>

(Source: O'Brien, M et al. 2021. National Biodiversity Threat Assessment. Ranking major threats impacting on Fiji's biodiversity. BIODEV2030)

Figure 2 – Infographic depicting the state of biodiversity in Fiji (Source: Fiji National Biodiversity Threat Assessment, 2021)

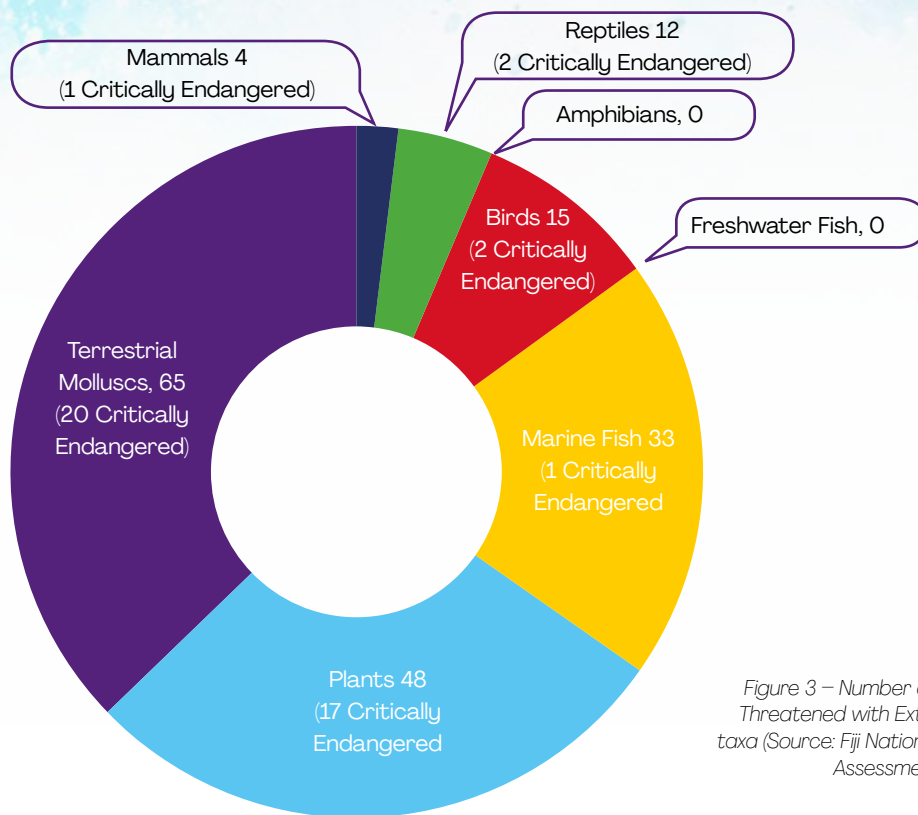
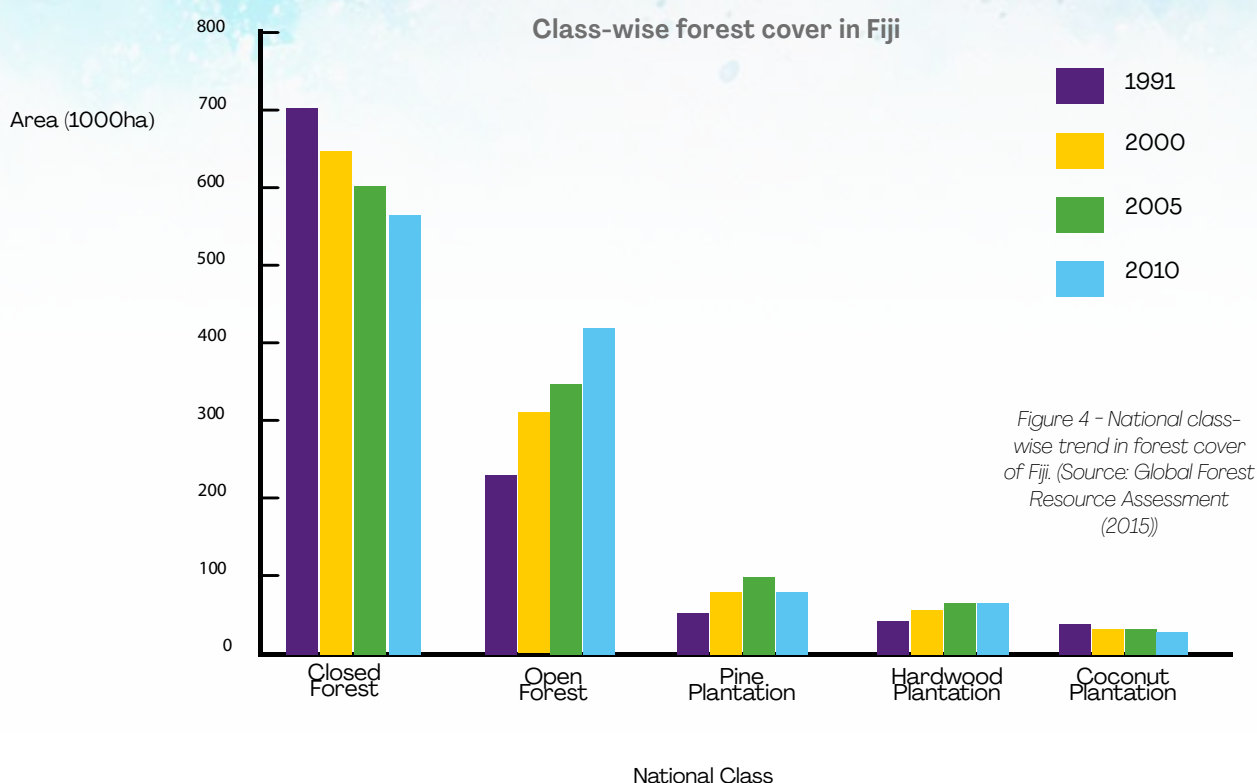


Figure 3 – Number of species listed as Threatened with Extinction in Fiji across taxa (Source: Fiji National Biodiversity Threat Assessment, 2021)

Using a combination of STAR metric data, other IUCN data and expert elicitation, the ‘threat assessment’ component of the National Biodiversity Threat Assessment study concluded that the biggest threat across the **terrestrial taxonomic groups** was the **loss, reduction of quality, and fragmentation of native forest habitats** in which the majority of Fiji’s endemic biodiversity is found. It was consequently proposed that addressing the loss/fragmentation of native forests would be the most effective means to fulfil the objective of this project: to reverse, or slow down the IUCN Red List Index for Fiji. While recent data on changes in forest cover in Fiji is not available, it is assumed that the trend from ‘closed forest’ to ‘open forest’ in Fiji observed between 1991 and 2010 has continued (Figure 4). The Ministry of Forestry in Fiji is currently conducting a National Forest Inventory, which will provide more up to date data on changes to the national forest estate since 2010.



A number of land-uses and factors across different sectors were shown to be drivers of forest loss and fragmentation. Of these, however, **Agricultural expansion for cash crops** emerged as the most significant driver.

On this basis it was concluded that the **Agriculture sector** was associated with the greatest direct impact or effect on Fiji's terrestrial biodiversity. A preliminary situation analysis of the agriculture sector undertaken during the inception phase concluded that the cultivation of **kava** is the main driver of contemporary forest loss in Fiji linked to the agriculture sector. This was confirmed during consultations held during the inception phase. Concerns were also raised about the ecological impact on forests of ginger and turmeric farming, commodities that are receiving a lot of farmer interest and government support at present. However, the land area under ginger and kava cultivation in Fiji is still relatively small, whereas the land area under kava production is orders of magnitude higher, thereby confirming kava as the main agricultural driver of forest loss, reduction of quality, and forest fragmentation.

Biological resource use was considered the biggest threat to marine species and ecosystems, with the main driver being **unsustainable coastal fishing** (subsistence and commercial).

The **Coastal Fisheries sector** was associated with the greatest direct impact on Fiji's marine biodiversity, with 'Overfishing' the main driver of biodiversity loss in the sector.

2. Situation analysis of the Agriculture Sector

Fiji's agricultural sector is generally considered in two parts: sugar and non-sugar agriculture (crops and livestock), with each falling under separate ministries (Ministry of Sugar, Ministry of Agriculture). Total agricultural production is valued at FJD1.5 billion, approximately 8.1% of GDP⁷. The sector's contribution to GDP has been growing modestly year on year since 2011, driven mostly by growth in domestic consumption and in the export of niche commodities such as taro, kava, turmeric and ginger. Although the contribution of the agriculture sector to GDP is relatively small, it remains an important sector of the economy in terms of income generation and food security, and to support diversification due to the impacts of Covid-19 on tourism, and to provide foreign exchange earnings. According to the 2020 Agriculture Census, 70,991 households⁸ out of a total of 191,910 households⁹ in Fiji were engaged in non-sugar agriculture, with approximately 16,631 households actively engaged in growing sugar.¹⁰

The government subsidised sugar industry, which for many years was the mainstay of the sector, has struggled in recent years due to loss of preferential access to the EU market, the expiry of long-term leases for sugar lands, and increasing transport and labour costs. It remains an important industry however as it provides direct and indirect employment to over 50,000 people, contributes to around 1.1% of GDP,¹² and generates about 10% of total exports by value.¹³

Top Five Temporary Crops by Volume (t) - 2020.

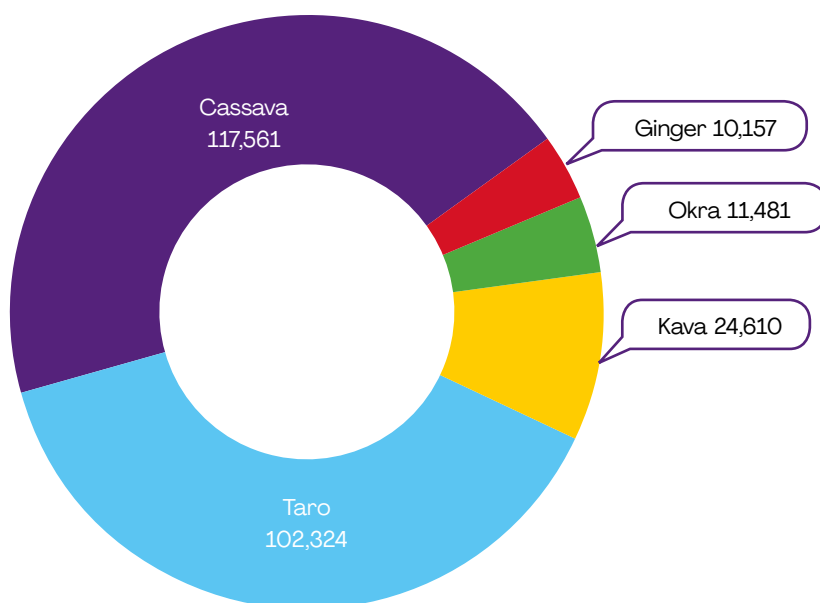


Figure 5 – Top 5 temporary crops by volume (Source Fiji Agriculture Census, 2020)

7 Wanshika Kumar. 2022. Reddy: Opposition don't understand Fiji's agriculture sector. The Fiji Times. 31/03/2022

8 Government of Fiji and FAO. 2020. 2020 Fiji Agriculture Census. Volume 1: General Table & Descriptive Analysis Report.

9 Government of Fiji. 2017. 2017 Population and Housing Census.

10 Sugar Cane Growers Council. 2019. 2018 Annual Report.

11 Fiji Kava Value Chain Analysis. Pacific Horticultural and Agricultural Market Access (PHAMA) program. 2017

12 Wanshika Kumar. 2022. Op cit.

13 Fiji Bureau of Statistics. Table 9. Exports by SITC. <https://www.statsfiji.gov.fj/statistics/economic-statistics/merchandise-trade-statistics>

The non-sugar component contributes around 7% of GDP¹⁴ and generates around 22% of total exports by value.¹⁵ It comprises of temporary and permanent crops and livestock farming. The top five temporary crop commodities by volume recorded in the 2020 agricultural census were cassava, taro, kava, okra, and ginger (Figure 5). The top five permanent crop commodities by volume were coconut, banana, papaya, plantain, and breadfruit (Figure 6). Livestock farming comprises beef and dairy cattle, pigs, goats, sheep, poultry and apiculture. The livestock sub-sector is relatively small with production volumes of around 15% when compared to crops (85%), with a similar ratio for production values.¹⁶

Fiji's farmland is dominated by farmers having traditional ownership, followed by those holding native lease, freehold land, lease from state, and occupied land with informal agreement (Figure 7).¹⁷ Farm holdings are generally small, with 93% of the 70,991 agricultural households being classified as subsistence farming households and having agricultural lots of less than 5 ha (65% have less than 1 ha). Only 5% and 2% of agricultural households are classified as 'semi-commercial' and 'commercial' respectively.¹⁸

Top 5 Permanent Crops by volume (t) - 2022

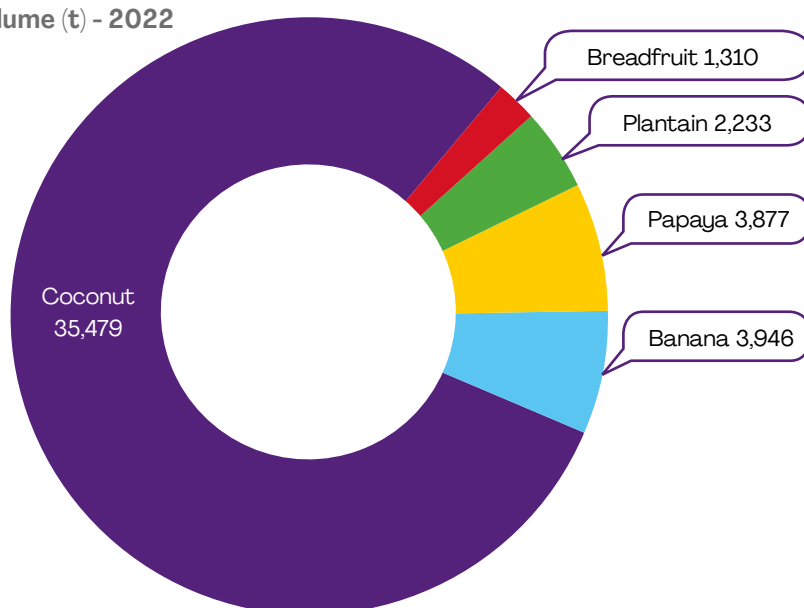


Figure 6 – Top 5 permanent crops by volume (Source Fiji Agriculture Census, 2020)

14 Wanshika Kumar: 2022. Op cit.

15 Fiji Agriculture & Rural Statistics Unit. 2020 Key Statistics on Fiji Agriculture Sector. Table 5.1.1: Comparing Value of Agriculture Trade at National and Sectoral Level (2019 – 2020). 2020 data.

16 Key Statistics on Fiji Agriculture Sector. Production data

17 Fiji Agriculture Census 2020. Op cit.

18 Key Statistics on Fiji Agriculture Sector:2020. The document does not include information on the definitions used for subsistence, semi-commercial and commercial categories.

Agricultural Land Tenure (%)

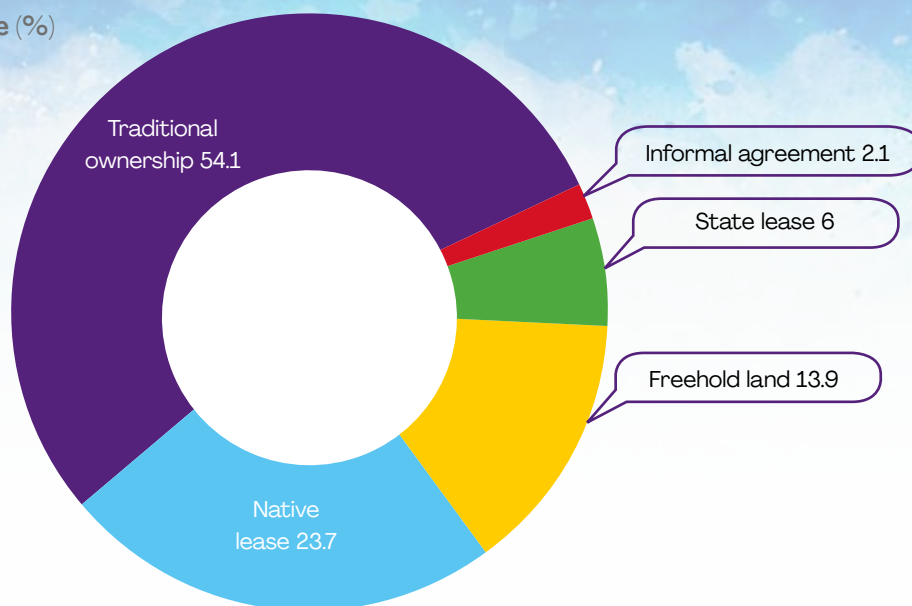


Figure 7 – Agricultural land tenure (Source Fiji Agriculture Census, 2020)

194,768 ha of Fiji's land area of 1,83 million ha, approximately 10% of total land area, is under some form of non-sugarcane agriculture¹⁹. 44,327 ha is occupied by temporary crops.²⁰ This is down from the roughly 75,000ha under temporary crops recorded in the 2009 agricultural census. However, from Figure 8 it is apparent that while land farmed for cassava, taro, rice and watermelon has decreased over this period, land under kava, ginger and cowpea production has increased.²¹ Sugar remains the commodity with the most hectares planted (approximately 37,000 ha).²² By contrast, approximately 1,113,444 ha²³ of Fiji's land surface is categorised as 'natural forest', approximately 61% of the total land area (Figure 9). However, upland forests and forest margins are increasingly being encroached upon by agriculture as agricultural land at lower elevations is lost to other development purposes, or as a result of declining soil fertility, and grassland fires.

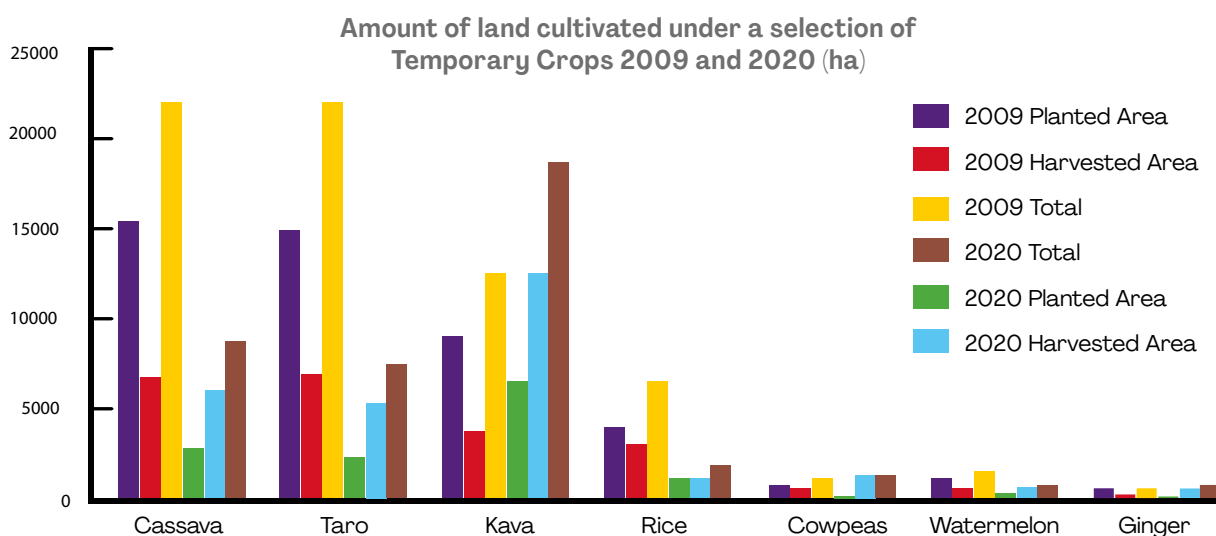


Figure 8 – A Comparison of the amount of land cultivated under a selection of Temporary Crops 2009 and 2020 (Source: Fiji Agriculture Census 2009 & 2020)

¹⁹ Ibid.

²⁰ The rest being permanent crops with pastures (17.5%); Permanent crops (no pastures)(14.3%); Permanent meadows and pastures (14.0%); Temporary meadows and pastures (supply pastures)(10.3%); Fallow for one year or more (6.4%) and Other (14.8%)

²¹ Data for turmeric was not disaggregated from the broader category of 'spices' in the 2009 and 2020 Agricultural Census

²² Fiji Sugar Corporation Annual Report 2020

²³ Broken down as follows: Cloud forest (Forests located at >800m altitude) 41,338 ha, Upland forest (Forests located between 600 & 800m altitude) 74,040 ha, Lowland forest (Forests located in less than 600m altitude) 998,065 ha. These figures include mangrove forests and plantation forests. Source: Ministry of Forestry. Directorate for Forest Resources Assessment and Conservation. July 2022



Figure 9 – Distribution of Fiji's forest areas (Source: Ministry of Forestry)

2.1. Focusing in on the kava industry - Major characteristics and challenges

Kava is an important traditional, ceremonial and cash crop in several island nations in the Pacific island region.²⁴ Kava (or Yaqona as it is referred to in Fiji) is a drink made from the dried and pounded roots (*waka*) and sliced rhizomes (*lewena*) of the cultivated *Piper methysticum* plant, which itself is also referred to as kava (or Yaqona). When strained in water, the extracted powder produces a beverage with mild sedative, anesthetic, and euphoriant properties. The significance of kava is deeply rooted and embedded in the Fijian way of life. For centuries, it was exclusively used during traditional cultural ceremonies. While it remains an integral part of Fijian customs, it has evolved into a popular social drink in the modern Fiji; known for its calming effects that widely appeal to working urbanites. Today, kava has become a very lucrative cash crop and is in high demand by both, local and overseas, markets.²⁵ There is also a market for kava as a herbal medicine as an alternative to pharmaceutical sleeping and anti-anxiety medication, which has significant market value internationally. It is also rapidly establishing itself as a niche artisanal recreational beverage in the USA.²⁶

Kava makes a significant contribution to rural livelihoods in many parts of the country, particularly on the outer islands where there are limited other opportunities. It is the most important cash crop in many rural areas and it employs large numbers of people in harvesting, processing and retail operations.²⁷ It is estimated that 26% of Fiji's 70,991 agricultural households are engaged in growing kava²⁸ with the proportion rising to as high as 80% in hotspot areas, e.g. Kadavu.

Valued at close to FJD400 million,²⁹ the kava industry represents an important 'development' crop as production is geographically dispersed amongst thousands of rural smallholder farmers and incomes derived from kava farming enable the socio-economic advancement of individuals and rural village communities.³⁰ In many instances farmers use their kava crop as a 'bank account' in that they harvest small amounts to sell whenever expenses arise. Kava is usually the principal cash crop in a mixed semi-commercial/semi-subsistence farming system. Farming households usually have one or more kava plots in a bush-fallow rotation on high, steeply sloping land often quite distant from the village. Smaller kava growers maintain a few hundred to a thousand kava plants at planting densities of 4,000 to 8,000 plants per hectare. Larger growers maintain 5,000-10,000 plants and regularly use hired labour for bush clearing, planting and harvesting. There are very few specialist kava farmers although some farmers are beginning to treat kava as a serious commercial venture with scheduled planting to produce a regular cash flow. Based on a planting density of 6,500 plants per ha (semi-intensive planting model), farmers can expect to earn about FJD37,000 per ha per annum after costs. Whilst kava production at current prices is clearly very profitable, far more so than any other crop, there are also risks involved. These include theft, pest and disease damage (e.g. kava dieback), strong wind damage and drought, all of which may damage or destroy the crop or delay harvesting.³¹

Kava has in recent years experienced increasing demand both locally and internationally, leading to the commodity experiencing a boom since 2014. Not surprisingly there has been an increase in the amount of land under kava production, increasing from 12,485 ha in 2009 to 18,788 in 2020³². The volume of kava exported has similarly risen (259 t in 2016 to 478 t in 2019) and has since 2018 overtaken taro as Fiji's most valuable crop export. The value of kava export in 2021 was FJD41.9 million, followed by taro, turmeric, ginger and spices (Figure 10).³³ Despite growth in the exports of kava and kava derived products, the domestic market is still by far the largest market for kava grown in Fiji with about 90% of national production sold and consumed locally.³⁴ However, while the domestic market is likely to be nearing saturation levels, it is anticipated that the export market will experience strong growth in coming years.

24 Fiji, Tonga, Vanuatu, Samoa - and parts of Micronesia; Davis R. and Brown J. 1999. Kava (*Piper methysticum*) in the South Pacific: its importance, methods of cultivation, cultivars, diseases and pests. ACIAR Technical Reports Series No. 46, 32p

25 Pacific Horticultural and Agricultural Market Access (PHAMA) program. 2017. Fiji Kava Quality Manual

26 This city is the kava capital of the U.S.

27 Pacific Horticultural and Agricultural Market Access (PHAMA) program. 2018. Fiji Kava Value Chain Analysis

28 Government of Fiji and FAO. 2020. Fiji Agriculture Census. op cit.

29 Total green harvest of 24,610,000 t (FAC, 2020) divided by 5 = 4,922,000 t x \$80 = \$393,760,000. Typically, 4 to 6kg of green kava is required to produce 1 kg of dried kava (Fiji Kava Quality Manual, 2017).

30 Mikheylov D. 2020. Kava cultivation in Fiji and rural poverty. The Borgen Project

31 Fiji Kava Value Chain Analysis. 2018. Op cit.

32 Government of Fiji. 2009. Fiji National Agricultural Census 2009; Government of Fiji and FAO. 2020. Fiji Agriculture Census. op cit. Areas are derived from adding the data for 'planted area' and 'harvested area' as provided in these census reports.

33 Fiji Bureau of Statistics. Table 9. Exports by SITC. <https://www.statsfiji.gov.fj/statistics/economic-statistics/merchandise-trade-statistics>. Download IMTS_April_2022_Release Tables xlsx. Table 6: Principle Domestic Exports by HS.

34 Fiji Kava Value Chain Analysis. 2018. Op cit.

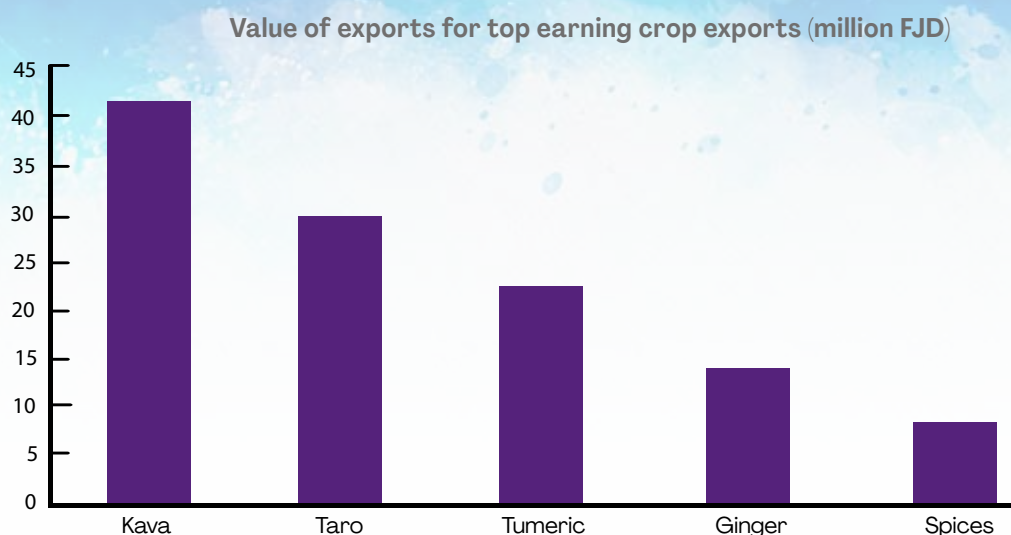


Figure 10 – Value of exports for top earning crop exports (Source: Fiji Bureau of Statistics, 2021)

Given this potential the Government of Fiji, along with other players such as the Pacific Horticultural and Agricultural Market Access Facility (PHAMA) supported by the Australian and New Zealand governments, are actively working to support and strengthen conditions to enable, safeguard and grow the industry. The focus of this support is on farmer support, quality assurance, and opening up access to new international and niche markets.

While there are many socio-economic benefits to growing the kava industry, the industry also comes with significant environmental impacts. This is because the predominant farming system today involves the clearing of native forest. Kava plants require well-drained soils, high rainfall, and soils with high organic content.³⁵ This prompts farmers to plant in forested areas on upland slopes which involves either the clear felling of forest margins or the clearance of open, or semi-open, patches in native forest. The crop is left to grow for 3 to 5 years after which it is harvested. Harvesting involves uprooting and removal of the entire shrub, which grows to about 2 m in height. It is common practice for farmers to then abandon the original planting site and to clear new areas of virgin forest in which to plant the next crop.³⁶ Natural forest regeneration at abandoned plantation sites is not assured, as recolonization of forest pioneering plants are constrained by the establishment of weeds, grasses, vines and/or alien vegetation and fire. The pattern of shifting cultivation associated with kava production is therefore a key agricultural driver of forest loss, reduction in forest quality and forest fragmentation which has been identified by the National Biodiversity Threat Assessment as the biggest threat to Fiji's terrestrial biodiversity. With the global kava market expected to grow dramatically in coming years, the projected impact on the local industry is likely to be significant, underscoring increasing concerns from environmentalists about the current and future environmental sustainability of the industry, given the associated clearance of native forests and its impact on Fiji's endemic biodiversity.³⁷ Comparing census data from 2009 and 2020, the amount of land under kava cultivation grew from 12,485 ha to 18,788 ha, an increase of 51% or five percent per year. All things being equal, if this rate of expansion were to be sustained the amount of land (of which a significant proportion would involve conversion of native forest land) could amount to 28,273 ha by 2030 and 64,026 ha by 2050 (Figure 11). A further indication of the growth in interest of farmers in kava is the increase of registered kava farmers from 10,400 in 2017 to 18,500 in 2022,³⁸ a 15% year-on-year increase.

³⁵ Thomson L., Doran J. and Clark, B. 2018. Trees for Life in Oceania. ACIAR

³⁶ Fiji Kava Value Chain Analysis. 2018. Op cit.; Lal, R. 2018 Annex 2: Introducing sustainable commercial farming systems at Tutu and in its catchment area. In A Review of the Tutu Rural Training Centre Courses by Andrew McGregor, Selina Kuruleca, Rohit Lal, Lex Thomson and Livai Tora.

³⁷ Richard Markham. 2022. Promoting kava exports, ignoring sustainability. DevPolicy Blog. 24 January 2022

³⁸ Information provided by the Ministry of Agriculture

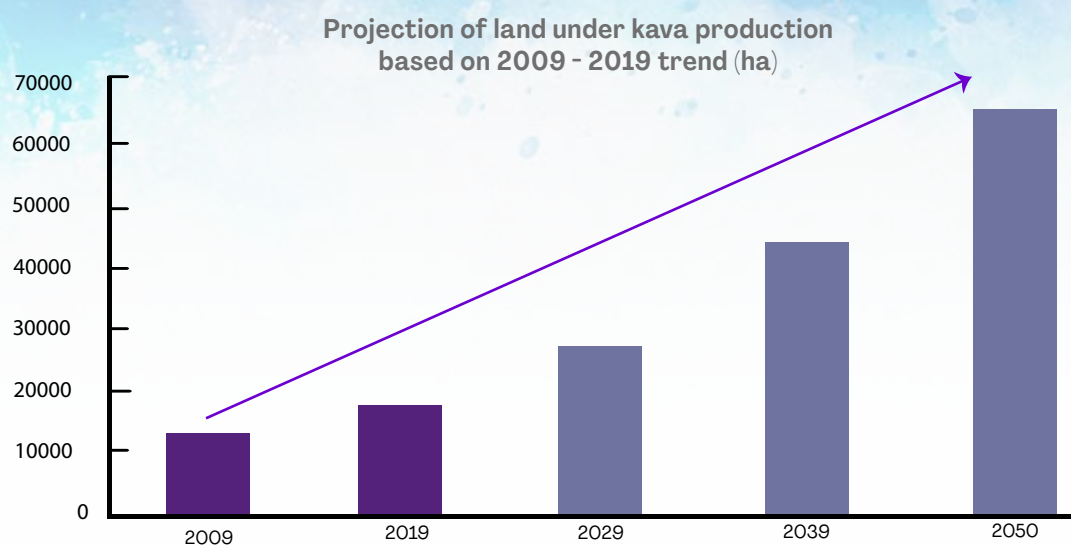


Figure 11 – Actual and projected increase in total land under kava production 2009 – 2050 (Source: Fiji Agriculture Census 2009 & 2020)

From the National Biodiversity Threat Assessment, it is evident that Fiji's forest-dependent biodiversity is already showing signs of decline under current rates of forest loss, reduction in forest quality and forest fragmentation, of which agriculture, in particular kava cultivation, is a significant driver. This poses a challenge for the industry not only in terms of reputational damage (as with palm oil and cocoa in other tropical countries), but also in terms of loss of ecosystem services on which the industry itself, and the farming communities involved, depend. Clearly there are ecological limits to the growth of the industry under the current system of shifting forest-based cultivation. While environmentalists increasingly recognise this as an issue undermining the sustainable development of the industry, it is an issue that the industry itself, and the agencies supporting its growth, have yet to fully appreciate.

2.2. Mapping of actors and stakeholders

There are multiple actors and stakeholders in the kava market value chain. These include actors that directly participate in the industry as well as indirect participants that we refer to as 'Enablers'; i.e. agencies providing technical support to the industry through policy development, research, extension, trade facilitation, etc. Table 1 below lists those actors that are directly involved in the value chain, with a description of their contributions, costs incurred, rewards and risks.

Table 1 – Actors involved in the kava value chain³⁹

Actor	Contribution	Costs Incurred	Rewards	Risks
Kava nursery operators	Produce kava planting material and sell to farmers	Cost of certified seed, potting mix, nursery operator's time	The selling price of seedlings to the farmer	Moderate: Natural disasters such as floods or cyclones
Kava farmers	Produce kava varieties required by the market. Farmers contribute land, labour and expertise, etc. Harvest, dry, store and sell at farm gate or to middlemen.	Cost of land preparation, fertiliser, seed material, family labour	The farmgate selling price of kava, fresh or dried	High: Natural disasters, weather, disease, theft, etc.
Traders/ middlemen	Buy fresh or dried kava from farmers. Transport, store, sort, grade package and sell to end user or exporter	Cost of kava produce, storage, labour for sorting, grading, package and transport	The price of kava sold to end users (retailers, consumers, exporters etc.)	Periods of oversupply Delay in payments from exporter
Processors/ exporters	Sort, grade, semi process, package, store, and sell to overseas market	Cost of operating packing facility and operating trucks.	Cost of cartons and packaging, paying for quarantine treatment, packhouse labour, etc.	The price of kava loaded on the aircraft (fob price). Delay in payments from importer; product offloaded due to lack of airline space; market access problems.
Biosecurity (BAF)	Treatment, inspection, certification	Contribution to BAF overheads, time of BAF officers	Fees and charges paid by exporters.	Limited
Land transporters (eg. WG, DHL etc.)	Transport packaged products from Suva to Nadi Airport	Cost incurred to load and transport cargo to Nadi Airport	Charges paid by exporters	Low: delays breakdowns
Airfreight and seafreight operators	Transport cargo from Nadi to export destinations	Freight costs, labour and management, etc	Freight charges	Moderate: post shipment losses, claims and delayed payments from consignees
Importers and wholesalers	Clears, stores, and distributes the product to retailers	Price of product paid to exporter, clearance, handling and distribution costs	Prices of kava sold to consumers and retailers	Quality issues Price undercutting from competitors
Consumers	The customer at the end of the chain	Retail price of kava	Consumption of kava	Uncertainties about quality

39 Reproduced from Fiji Kava Value Chain Analysis, 2018. Pacific Horticultural and Agricultural Market Access (PHAMA) program. Annex 3 Contribution of Kava Value Chain Actors.

Key actors in the kava market value chain are depicted in Figure 12. The kava value chain begins with the growers who may source planting material from suppliers or, more commonly, source cuttings from existing kava plants. Growers (of which there are currently 18,500 registered) use a variety of methods to access markets. These may include direct selling at the local village level, or selling to vendors at municipal markets situated in nearby towns. It may also include transporting kava to urban centres via extended family networks, to be sold by relatives. The biggest proportion however is sold at the 'farm-gate' to agents and middlemen. These traders, agents and middlemen then 'on-sale' to a combination of market vendors, retail companies and/or wholesale companies that service the domestic and export markets.

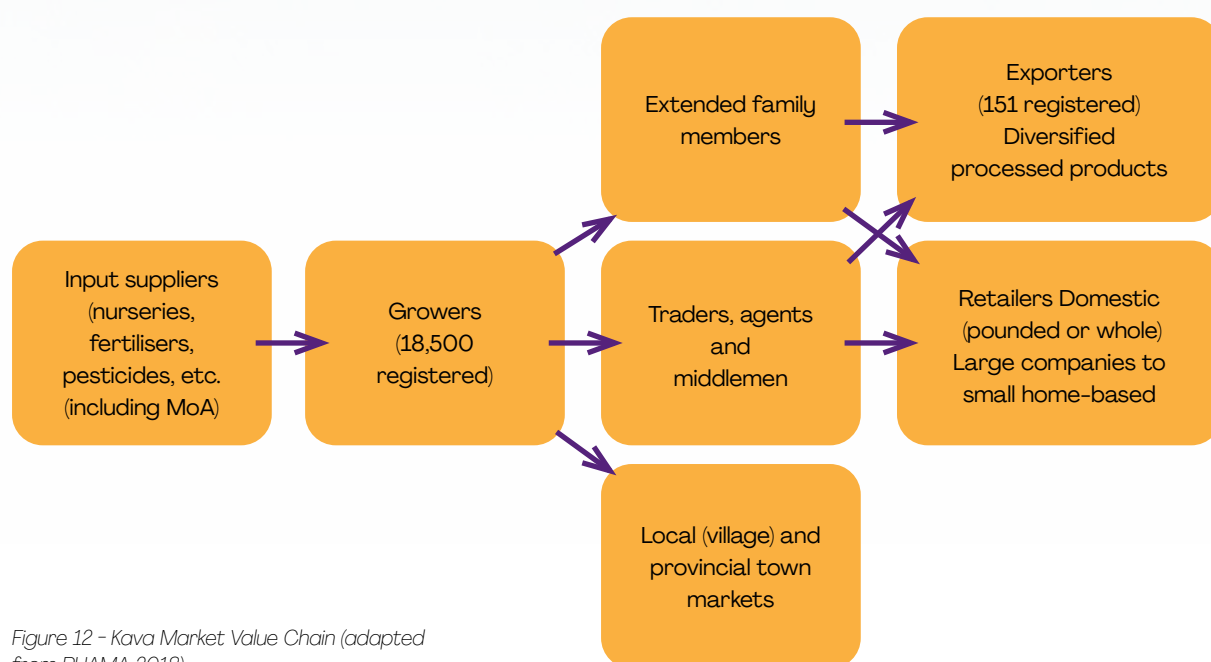


Figure 12 - Kava Market Value Chain (adapted from PHAMA 2018)

Table 2 provides a list of all the actors that work to enable the growth and economic sustainability of the kava industry. Table 3 lists some of the bigger export companies.

Table 2 – Enablers of the kava industry

Enablers	Role played in the Industry
Ministry of Agriculture	Administers a Kava Development Programme. See relevant units and divisions below.
Economic Planning Division	Includes units for policy development, trade facilitation and statistics. The Kava Bill and the Land and Water Resources Management Bill are currently amongst 34 items of proposed agriculture sector legislation referred back to them by the Solicitor General's Office for further review/consultation.
Research Division	Involved in the conservation of the 13 kava varieties found in Fiji. Currently trialling non-forest based farming systems for kava in Taveuni. These include i) growing kava under shade cloth, ii) in an intercropping agro-forestry system using Caliandra, and iii open field. After two years the system under shade cloth is returning the best results. Interested to convert trials into demonstration farms in kava hotspot areas. Currently promoting growing of kava seed stock in their 'climate smart nursery' to supply farmers.

Crops - Extension Division	<p>Support kava farmers with inputs (e.g. planting material, compost) and infrastructure (drying sheds, nurseries) – mostly directed at youth groups under the ‘Rural Millionaires Programme’ which is a programme to encourage young men to grow kava.</p> <p>Give advice on kava varieties.</p> <p>Coordinate and facilitate ‘trainings’ for farmers on all aspects of kava production. Encourage farmers to move from semi-subsistence to commercial.</p>
Landuse Planning Unit	<p>- Participate in farmer trainings focusing their input on SLM. Advise farmers on suitable crops in term of soils and land capability classes (but do not have guidelines for kava cultivation). Advise against cropping on slopes in excess of 16°. Encourage farmers to leave 30% of trees when clearing forest areas and to use Vetiver grass to reduce soil erosion.</p> <p>- Screen applications for agricultural loan applications to the Fiji Development Bank and lease applications to the iTaukei Land Trust Board (but do not currently have guidelines for kava cultivation)</p> <p>- Advise land owners (mataqalis) on land use planning</p> <p>- Advise farmers on farm planning</p>
Agricultural Marketing Authority (AMA)	Facilitates access to markets for inaccessible and uneconomical rural, remote, & maritime farming communities. Includes export.
Ministry of Commerce, Trade and Transportation and Ministry of Foreign Affairs	Facilitates international trade and market access through bilateral, regional and multi-lateral and trading bloc agreements. Currently has trade agreements with WTO, Pacific Island Countries and interim agreements with the EU and the UK. Sits on the National Kava Task Force. With the Ministry of Foreign Affairs it also administers Trade Commissions linked Fijian Embassies in North America, Australia, New Zealand, China and Papua New Guinea.
Ministry of Health	Works with Biosecurity Authority of Fiji to monitor phyto-sanitary standards relating to domestic and import and export trade in kava.
Ministry of iTaukei Affairs / iTaukei Land Trust Board	<p>Administers agricultural leases on iTaukei land</p> <p>Promotes conservation practices on iTaukei lands through system of Conservation Officers and local-level natural resource management structures.</p>
National Kava Coordinating Committee	<p>Established in January 2022</p> <p>Umbrella structure encompassing the National Kava Task Force, Think Tank, and Technical Working Group. Chaired by the Permanent Secretary of the Ministry of Agriculture</p> <p>Currently working on a National Kava Industry Plan</p>
National Kava Task Force	Composed of: Ministry of Agriculture; Ministry of Health; Ministry of Commerce, Trade and Transportation; Ministry of Foreign Affairs; Kava exporters; Biosecurity Authority of Fiji; Farmer representatives; Fiji Crop and Livestock Council; University of the South Pacific; Pacific Horticultural Agricultural Market Access; Secretariat of the Pacific Community
Think Tank	Senior Management from Ministry of Agriculture with SPC
Technical Working Group	Inter-sectoral government agencies
Fiji Crop and Livestock Council	Raise the profile of farmers involved in crops and livestock production; acts as the apex forum for advocacy and key services to respond to the needs of agriculture with the view to drive growth in the industry. Umbrella body for Kava Growers Associations. EU funded.

Pacific Horticultural Agricultural Market Plus Programme	A regional programme aimed at improving quality assurance systems and standards to ensure that market access is maintained and the volume and quality of exports increased. PHAMA is an Australian Government initiative cofounded by New Zealand.
Fiji Development Bank	Provides low-interest agricultural loans to farmers that have formal agricultural leases. Types of loans include 'Farm Development Loans' and loans to engage in 'root crop' farming including kava.
SPC Land Resources Division	Research and technical support to the agriculture sector. Relevant programmes include: POETCom - a programme to promote organic farming, and Safe Agricultural Trade Facilitation for Economic Integration in the Pacific (SAFE Pacific) project which includes a focus on sustainable agricultural value chains for kava production in the region.
Food and Agriculture Organisation (FAO)	Provides technical support to Agriculture, Forestry and Fisheries sectors. Not currently active in addressing kava deforestation issues.

Table 3 - Exporters

EXPORTERS	
There are 151 companies currently registered with the Ministry of Agriculture to export kava. This is up from 35 in 2017. Some of the larger players are listed below.	
Kava Korp	Exporter. Source supplies from farmers in Gau, Lomaiviti, Naitasiri and Namosi.
Lami Kava	Wholesaler, Retailer and Exporter. Lami Kava is synonymous with good quality kava. For the domestic market it distributes its product primarily through supermarket chains. It has two of its own outlets. Its factory is in Veisari (Suva) where it pounds and packages dried kava. Has recently moved into drying kava. Sources supplies via agents from approximately 1000 farmers from Vanua Levu, Kadavu, Koro, Gau, Namosi and Serua.
Fiji Kava Ltd	Major exporter listed on the Australian Stock Exchange. Based in Levuka, Fiji Kava is the only company that maintains a fully integrated supply chain; i.e. it produces its own kava which it processes into various products for the domestic and export markets. Fiji Kava is the only foreign based company currently operating in Fiji. It has invested heavily in developing superior strains of tissue culture and is positioning itself to exploit the demand from the export pharmaceutical, nutraceutical and beverage markets.
Green Gold Kava	Exporter based in SavuSavu. Prime Minister's Exporter of the Year Award in 2016 and 2018. 300 suppliers. Exports to Pacific Island countries, New Zealand, Australia and the United States.
MyKava	Kadavu-based family business that sources kava exclusively from its family farms.

2.3. Pressures triggered by kava production on biodiversity and impact

i. Current state of biodiversity and desired state in activity zones of the sector

Spatial data on the location of kava farms in Fiji is currently not collected and as a result there are no detailed maps of showing the distribution of kava farms do not exist: activity zones.⁴⁰ However, a review of the Farming Household Baseline Survey⁴¹ conducted in 2019 indicated that the highest number of kava farmers were in Cakaudrove province, followed by Kadavu, Lomaiviti and Bua (Figures 13 & 14). It is therefore not surprising that a mapping of threats to the Key Biodiversity Areas (KBAs) in Fiji listed ‘smallholder farming’ as a key threat to the KBAs in Cakaudrove, Kadavu and Lomaiviti provinces. The correlation of these two data sources suggest a level of confidence that these KBAs are most at risk from kava farming. The KBAs are: Taveuni Highlands and Natewa/Tulunoa Peninsula in Cakaudrove province, Gau Highlands and Ovalau Highlands in Lomaiviti province, and East Kadavu and Nabukelevu in Kadavu province (Figures 15-17). Of these, only Taveuni Highlands currently has protected area status, although this has not prevented encroachment into the forest reserve by kava and taro farmers.

Table 4 provides an overview of the above Key Biodiversity Areas together with a listing of IUCN Red List Threatened Species occurring in each KBA. The desired state of biodiversity in these kava production activity zones, in terms of the IUCN Red listed species, would be to stabilise and increase the populations of all threatened species, through protection of their forest habitat.

40 Strategic actions needed to address this are discussed under recommendations in Box 4.

41 Fiji Agriculture Rural Statistics Unit. 2019

KAVA PRODUCTION IN FIJI



Figure 13 - Map of the major kava producing areas in Fiji (Source: PHAMA Plus, 2017)

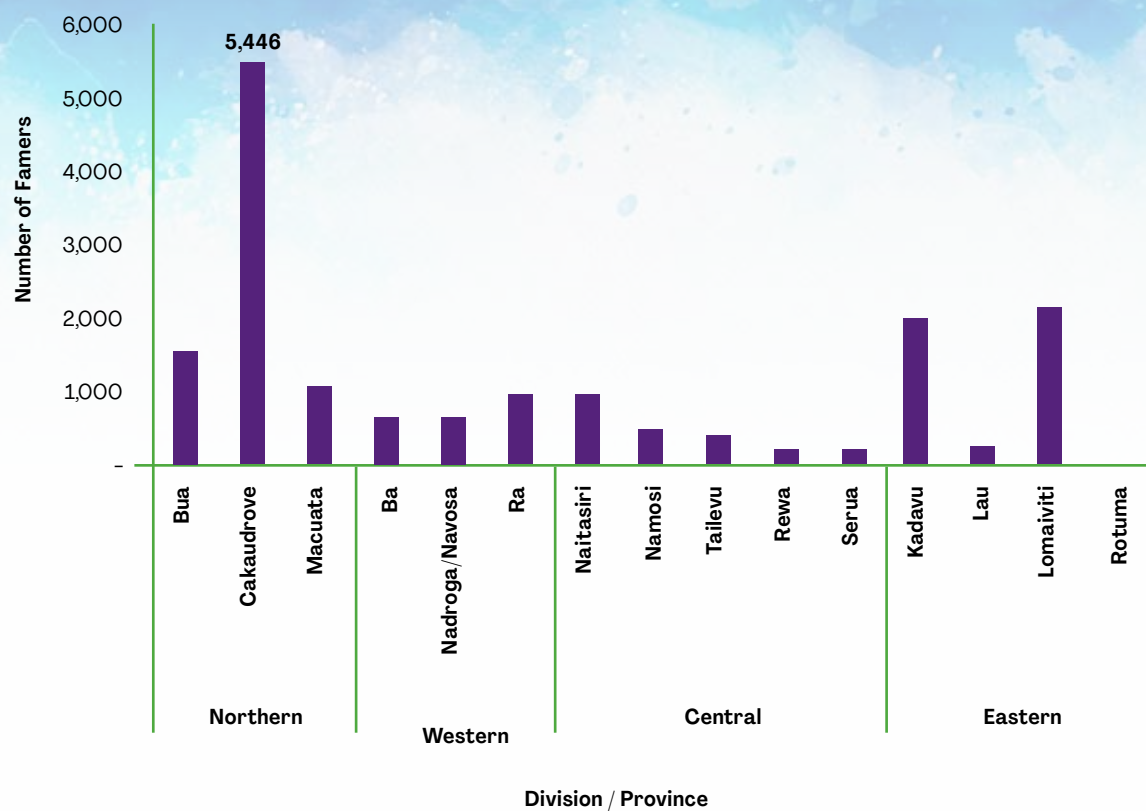


Figure 14 – Number of kava farmers per province (Source: Review of the Farming Household Baseline Survey, Fiji Agriculture Rural Statistics Unit. 2019)

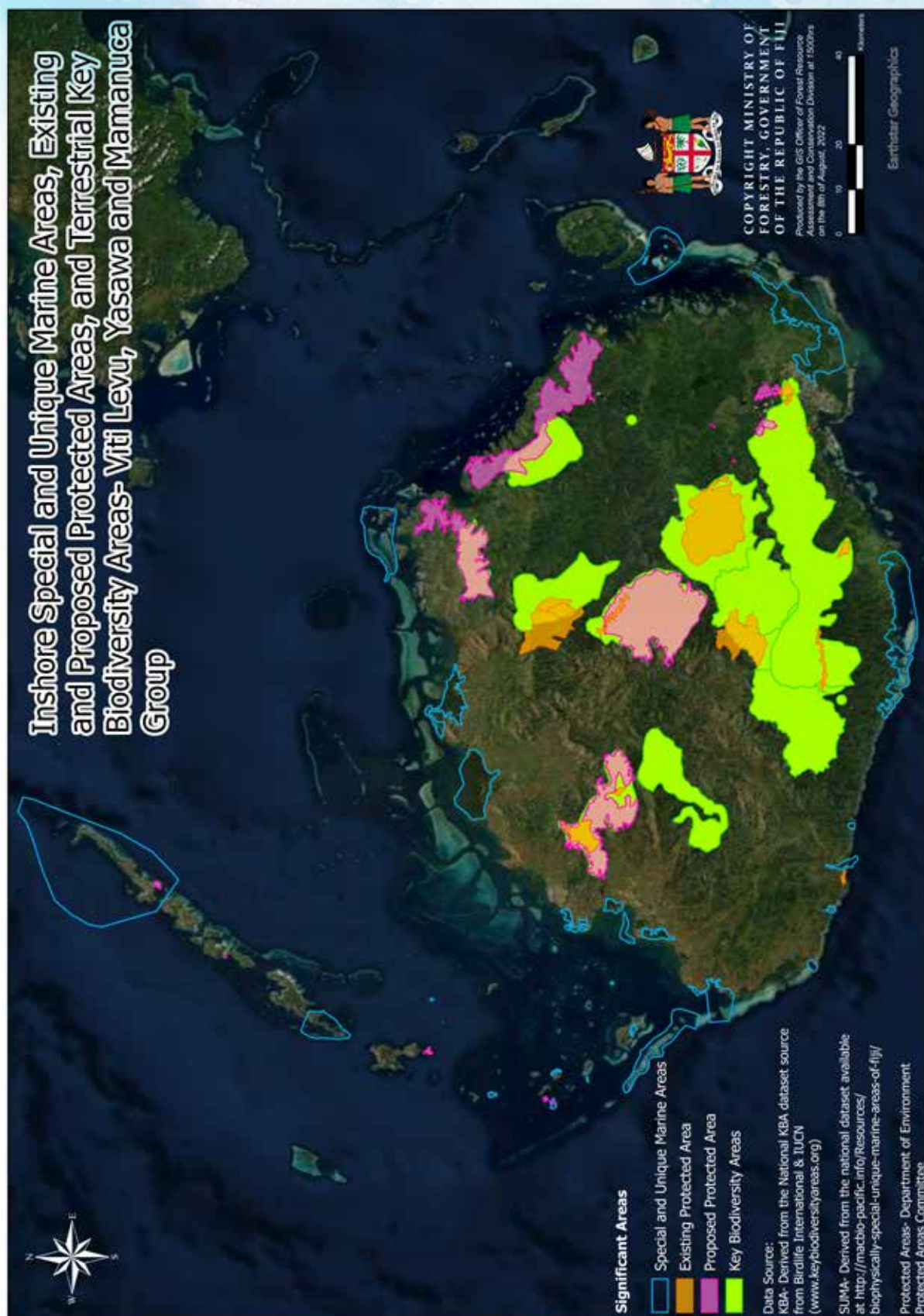


Figure 15 – Inshore Special and Unique Marine Areas, Existing and Proposed Protected Areas and Terrestrial Key Biodiversity Areas – Viti Levu, Yasawa and Mamanuca Groups

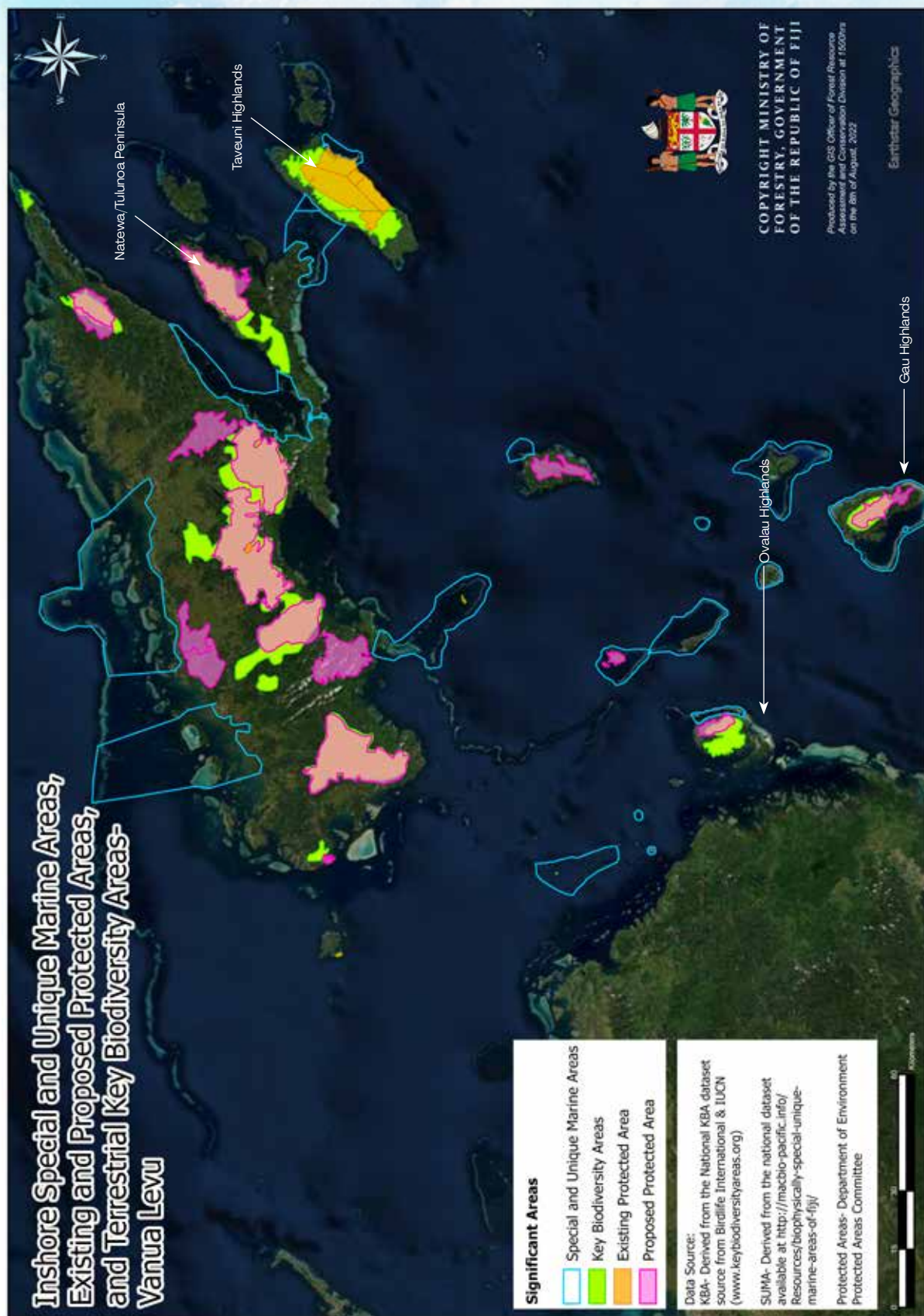


Figure 16 – Inshore Special and Unique Marine Areas, Existing and Proposed Protected Areas and Terrestrial Key Biodiversity Areas – Vanua Levu and Lomaiviti Group showing KBAs most at risk from kava farming

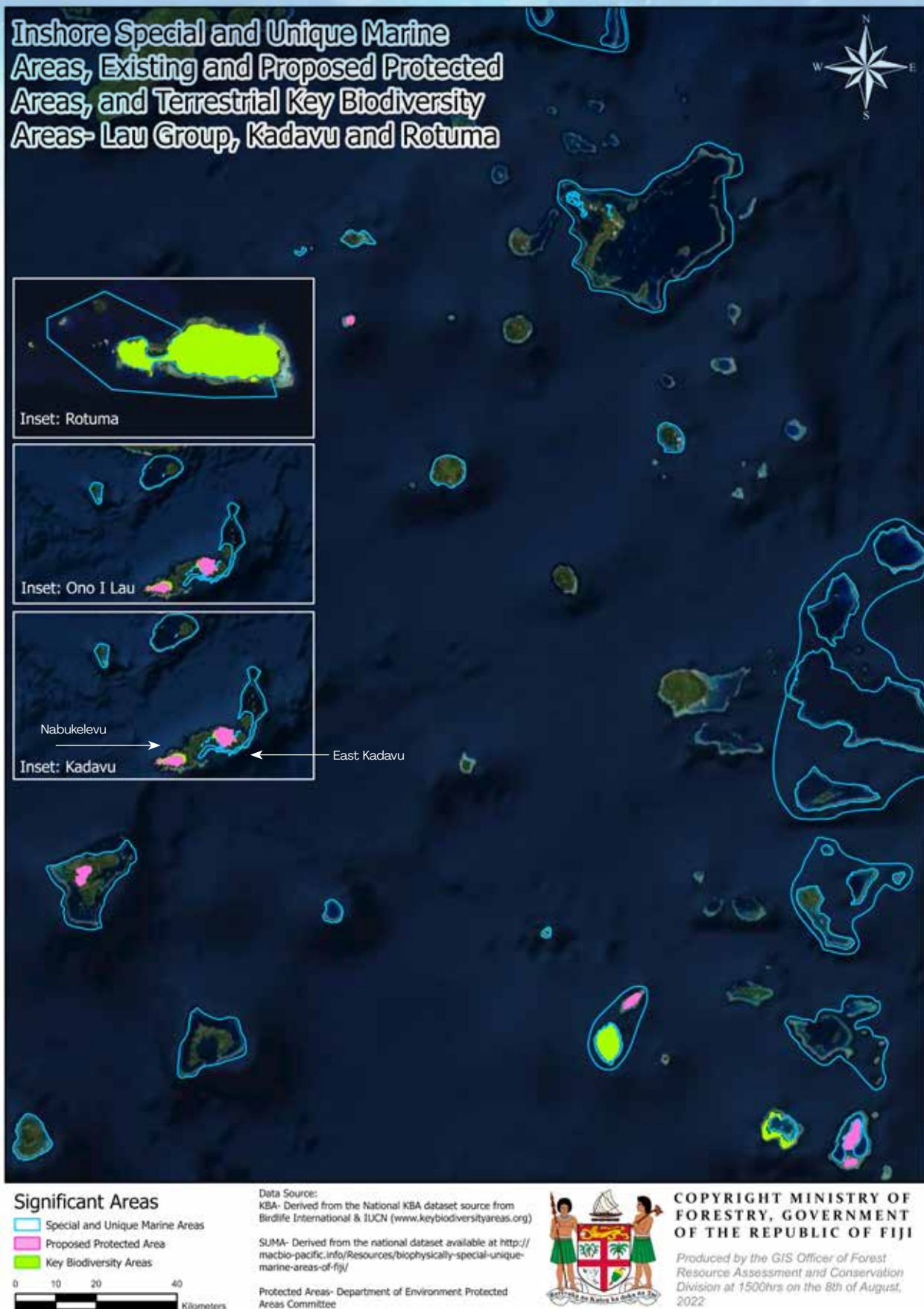


Figure 17 – Inshore Special and Unique Marine Areas, Existing and Proposed Protected Areas and Terrestrial Key Biodiversity Areas – Lau Group, Kadavu & Rotuma showing KBAs most at risk from kava farming

Table 4 – Key Biodiversity Areas most at risk from kava farming

Key Biodiversity Area	Province	Area (ha)	No of Red Listed Species (CR, EN, VU, NT, LC)	No of species listed as Threatened (CR, EN, VU)	Details
Taveuni Highlands	Cakaudrove	29,177	50	20	Monkey-faced Bat; <i>Syzygium phaeophyllum</i> (endemic plant in the family Myrtaceae) EN – Fiji Ground Frog; Lau Banded Iguana; <i>Heterospathe longipes</i> (endemic palm); <i>Neuburgia macroloba</i> (endemic plant in the family Loganiaceae); <i>Spiraeanthemum serratum</i> (endemic plant in the family Cunoniaceae) VU – Shy Ground-dove; Black-faced Shrikebill; Fijian Blossom Bat; 9 x endemic plants
Natewa/Tulunoa Peninsula	Cakaudrove	17,759	32	11	CR – <i>Weinmannia exigua</i> (endemic plant in the family Cunoniaceae) EN – Lau Banded Iguana VU – Shy Ground-dove; Black-throated Shrikebill; Natewa Silktail; Silktail; 5 x endemic plants
Gau Highlands	Lomaiviti	5,234	19	5	CR – Fiji Petrel; <i>Aglaia Unifolia</i> (endemic plant in the family Meliaceae); <i>Cyrtandra denhamii</i> (native tree in the family Gesneriaceae) EN – Fiji Ground-frog VU – Shy Ground-dove
Ovalau Highlands	Lomaiviti	6,090	7	7	EN – Fiji Ground-frog; Lau Banded Iguana; <i>Acosmithia vitiense</i> (endemic plant in the family Cunoniaceae) VU – 4 x endemic plants
East Kadavu	Kadavu	8,004	21	6	VU – Black-throated Shrikebill; Shy Ground-dove; Crimson Shining-parrot; 3 x endemic plants
Nabukelevu	Kadavu	8,508	19	5	VU – Crimson Shining-parrot; Collared Petrel; 3 x endemic plants

ii. Direct and indirect pressures

Loss of forest, reduction in forest quality and forest fragmentation are key pressures impacting on tropical forest ecosystems that provide habitat for Fiji's terrestrial biodiversity.⁴² Table 5 lists the key drivers of forest loss for the above sub-set of Key Biodiversity Areas as identified by their respective assessment processes. It is apparent that the tropical forest ecosystems in these KBAs are threatened by a range of drivers, of which Invasive species and Logging are also significant.

42 O'Brien et al. 2021. Op cit.

Table 5 – Ranking of Threats at the site level⁴³

Key Biodiversity Area	IUCN Threat Level 1	Site Threat Level
Taveuni Highlands	Invasive & other problematic species, genes & diseases	HIGH
	Agriculture & aquaculture	HIGH
	Natural system modifications (Fire)	HIGH
	Human intrusions & disturbance (Works)	HIGH
Natewa/Tulunoa Peninsula	Invasive & other problematic species, genes & diseases	HIGH
	Agriculture & aquaculture	HIGH
	Natural system modifications (Fire)	HIGH
	Biological resource use (Logging)	HIGH
Gau Highlands	Invasive & other problematic species, genes & diseases	VERY HIGH
	Agriculture & aquaculture	VERY HIGH
	Natural system modifications (Fire)	VERY HIGH
	Biological resource use (Logging)	VERY HIGH
Ovalau Highlands	<i>No threats listed but known to be a kava farming hotspot</i>	
East Kadavu	Invasive & other problematic species, genes & diseases	HIGH
	Agriculture & aquaculture	HIGH
	Natural system modifications (Fire)	HIGH
	Biological resource use (Hunting, Collection & Logging)	HIGH
	Residential & commercial development	MEDIUM
Nabukelevu	Agriculture & aquaculture	HIGH
	Invasive & other problematic species, genes & diseases	HIGH
	Biological resource use (Hunting & Collection)	HIGH

An indirect driver of forest loss due to kava farming is the construction of access roads in upland forest areas. A case in point would be in Taveuni where access roads established to access a high-lying hydropower dam and telecommunications infrastructure have been used by farmers to clear forest for kava cultivation in otherwise inaccessible upland forest areas.

iii. Risks and impacts for the sector and the country

Upland moist tropical forests are often situated in water catchment areas and therefore play a critical role in regulating rainfall and water supply to villages and towns situated at lower elevations. Increasing rates and severity of flash flooding in Fiji have been linked to forest disturbances through human activities. Removal of upland vegetation cover not only results in faster water run-off velocity, it also leads to blockages of river systems and drainage infrastructure through accelerated levels of soil erosion and sedimentation of rivers. Reduction in upland forest cover, particularly cloud forest, can also lead to a reduction in the volumes of ground and surface water available in catchment areas. This is because cloud forests i) intercept passing moist air which is converted into cloud and precipitation, and ii) through evapotranspiration trees at high elevations produce rain clouds. An example of the loss of water provisioning ecosystem services can be found in South Taveuni (Vuna), where forest loss due to agricultural expansion has led to the drying up of ground and surface water supplies. Residents in this area today have to rely on a desalination plant and water carting during dry periods for their domestic water needs.

43 Sourced from <https://www.keybiodiversityareas.org/>

Forest loss and accompanying soil erosion, is also associated with an increase in the turbidity of surface water systems leading to a reduction in the quality of water available for domestic needs. Residents of Fiji's capital city Suva are increasingly impacted by water disruptions to the piped water supply following heavy rains when pumps at the intake reservoirs are not able to operate as a result of high water turbidity linked to unsustainable landuse practices in water catchment areas.⁴⁴

Forest-based biodiversity provides important ecosystem services for kava farmers relating to maintenance of soil moisture and health, humus and organic content, nutrients, drainage, shade, prevention of kava die-back disease and provision of wind breaks. Water quality is also an important consideration as freshly harvested kava plants are mostly washed in free-flowing streams and rivers as part of the production process.

The maintenance of biodiversity and forest health is therefore important to kava production systems and also to the imaging and branding of the industry, where good quality kava is synonymous with high quality natural environments as is still found in many parts of Fiji. However, as pressures on Fiji's natural forests increase, and in the absence of effective forest conservation measures, desertification becomes a risk that will make it more difficult for the industry to maintain the current nature-positive imaging. This risk is particularly applicable to those smaller islands that are kava producing hotspots, such as Koro, Ovalau, Gau and Rabi, where the areas of forest cover are limited by their geography.

There is therefore a pressing need to raise the profile of the ecological risks and limits of kava production as Fiji seeks to increase levels of production and to develop new export markets for kava.

2.4. Best practices and inspiring models

i. Existing sectoral best practices in Fiji

It is perhaps not surprising that work on developing and trialling more ecologically sustainable and forest-friendly kava farming systems is taking place on the 'garden island' of Taveuni which is known for its high quality forests and biodiversity. It is also known amongst farmers for its fertile soils which resulted in a high rate of in-migration in the late 1990's and early 2000's as Taveuni became the regional centre of taro production for the New Zealand export market, following the collapse of the industry in Samoa after a severe outbreak of Taro Leaf Blight.⁴⁵ Since then a combination of fragile volcanic soils, poor farming practices and soil mismanagement has resulted in the soils becoming exhausted at lower elevations leading to dramatically declining yields, and a trend in farmers moving upslope and clearing forests in their search for soil nutrients⁴⁶. With the soaring kava prices since 2014, kava has today taken over from taro as the main cash crop, with farmers continuing to clear upland forests.

The Tutu Rural Training Centre, run by the Catholic Church with grant funding from Government, has been operating in Taveuni since 1969. It is essentially a live-in adult education training centre geared at equipping young aspiring farmers with the skills to become self-employed in agriculture. Tutu is a key player in that it draws its trainees exclusively from Cakaudrove province, a kava producing hotspot, with over 2,000 young people having completed the various courses on offer as at 2011⁴⁷. The training centre is situated on 433 ha of freehold land belonging to the church which spans land from the coast to high elevation forests. Every three years the 50 new intakes are allocated 0.8 ha plots for planting kava and Taro, income from which they are permitted to keep. Part of the selection process is that applicants must have access to farming land in their village and must have demonstrated their interest by having planted 1000 kava plants. Training courses involve alternating long periods spent at the centre, followed by long periods spent back in the village where learnings are meant to be applied.⁴⁸ Over the 40 years of the TRTC's existence, approximately 60% of their estate has been deforested and used for taro, kava, and coconut plantations.⁴⁹ A review in 2018 pointed out that if every group of intakes was allowed to deforest new areas, the whole area would be deforested over 10 training cycles. Since then, the centre has

44 Heider C., Tuimaleg S., Salminen E., Ericksen R. and Buckley M. 2020. Ecosystem and socio-economic resilience analysis and mapping: Taveuni island, Fiji. Apia, Samoa: SPREP, 2020.

45 Sharma, A. 2020. Soil fertility and productivity decline resulting from twenty two years of intensive

46 Taro cultivation in Taveuni, Fiji. National Agriculture Symposium. 3-4 December 2020. The Pearl Resort, Pacific Harbour, Navua, Fij.

47 Andrew McGregor; Livai Tora with Geoff Bamford and Kalara McGregor. 2011. The Tutu Rural Training Centre. Lessons in non-formal adult education for self employed in agriculture.

been experimenting with various agro-forestry adaptations to the kava farming system aimed at replenishing soil nutrients and shortening fallow periods⁵⁰. This work has been supported with technical inputs from Dr Rohit Lal, a Taveuni native, who is the Senior Research Officer for the Ministry of Agriculture based on the island. Dr Lal has a keen research interest in trialling adapted and/or alternative farming systems for kava to address the high rates of deforestation under the conventional system. His designs take into account the nutrients extracted by commercial kava cultivation and the nutrients (nitrogen, phosphorous and) needed to replace them to restore soil fertility and soil health⁵¹. He is an advocate for integrated soil fertility management systems, such as incorporating *Mucuna* beans (*Mucuna pruriens*) with *Glyricida* and *Caliandra* in an alley cropping agro-forestry system to build soil organic matter levels and replace extracted nutrients.

In addition to the experimentation taking place at Tutu, the Ministry of Agriculture is running trials at its Mua Research Centre in Taveuni geared at establishing alternative farming systems for kava farming. These involve the planting of kava in three different formats: i) in a mixed cropping system based on intercropping kava with tree crops and other ground and root crops, including vetiver grass hedge rows; ii) growing kava under shade cloth that is progressively reduced over time, and iii) growing kava in the open (control). These trials have yet to run to completion but early indications are that the kava growing under shade cloth is performing best. This would appear to contradict farmers' conventional knowledge that forest trees in kava plantations need to be removed to enable the penetration of sunlight. However, the system of shade cloth is unlikely to appeal to farmers given the costs involved. Currently the Ministry of Agriculture advises that 30% of trees in kava plantations should be retained for purposes of drawing up sub-soil nutrients, minerals and moisture to the surface soils. It is proposed that this practice would allow for annual rotational kava cropping to take place as opposed to shifting to new areas.⁵² Similar trials are currently being incorporated into the Sustainable Land Management demonstration farms at Navuso Agricultural Technical Institute in Naitasiri province, an area that is also characterised by intensive kava production.

ii. Other relevant best practices to address pressures from other countries

Relative to major forest-based crops such as cocoa and palm oil, kava is a relatively small crop that is geographically restricted to the Pacific island region. The issue of best practices with regard to forest and biodiversity loss have therefore not received similar levels of attention as compared to more internationalised forest-based crops. Lessons could however be learned from Pohnpei in Federated States of Micronesia, where urgent interventions were required to reverse the growing environmental impact of kava deforestation on the capital island's main watershed.⁵³ Best practice in Pohnpei involved a two-pronged strategy that included a 'Low Grow' campaign which aimed to transfer the agricultural skills required for high-yield, sustainable kava propagation in the lowlands to all farmers, and to demarcate the watershed boundaries of upland areas as areas off-limits to agriculture. The effort was coupled with an educational program that explained why it important to conserve watersheds. The campaign achieved good results (42% of upland farmers moved their cultivation to lower slopes), with a dramatic decrease in forest clearings, from a total of 1,741 recorded in 2001 to only 13 new clearings in 2005⁵⁴.

Lessons from cocoa and palm oil production are less easily transferable as these tree crops are permanent whereas the whole kava plant is harvested between 3 – 5 years after planting. Best practices in the cocoa sector revolve around various agro-forestry intercropping and mixed cropping systems to promote more diversified and sustainable income streams for farmers.

48 Andrew McGregor, Selina Kuruleca, Rohit Lal, Lex Thomson and Livai Tora. 2019. A review of the Tutu Rural Training Centre Courses. Annex 2: Introducing sustainable commercial farming systems at Tutu and in its catchment area.

49 Ibid

50 Ibid

51 Dr Lal estimates for every ha of kava harvested after 3 years approximately: 40kgs of nitrogen; 20kgs of phosphorus, and 100 kgs potassium needs to be replaced.

52 Dr Rohit Lal, pers comm. 23/06/2022

53 Merlin M. and Raynor Q. 2005. Kava Cultivation, Native Species Conservation, and Integrated Watershed Resource Management on Pohnpei Island. Pacific Science, vol. 59, no. 2:241–260.

54 <https://whitleyaward.org/winners/our-island-our-future-micronesia/>

2.5. Strengthening the transformative role of the national framework towards a sustainable kava industry

i. Aspects of the framework in favour of environment and sustainable development

At present, the kava industry in Fiji does not have a dedicated national regulatory framework in place. Given the growing importance of the industry, the Ministry of Agriculture (in partnership with the Ministry of Commerce, Trade, Tourism and Transport) is working with industry stakeholders to introduce a Kava Act. A Kava Bill was developed in 2016⁵⁶ and following at least three readings in Parliament, it is still undergoing review.⁵⁷ The main goal of the Bill in its current form is to establish a Fiji Kava Council for the purpose of the regulation and the management of the kava industry and for the administration of the Act. The Bill is designed to ensure that the trading of kava at domestic level, and exported or imported at international level, will be done according to appropriate standards and procedures. It will require kava growers or farmers, processors, importers and exports to be registered and will control the allocation of import and export licenses. A review of the Bill by the Parliamentary Standing Committee on Natural Resources in 2018 recommended the scope of the Bill be expanded to include:

- a) The establishment and formation of Kava Growers Co-operatives;
- b) The control, monitoring and management of the kava supply chain;
- c) The regulation of kava process in accordance with quality and branding;
- d) The regulation of kava consumers;
- e) To ensure sustainable market supply;
- f) The social, economic, environmental and health impacts;
- g) The establishment of a national database to capture all aspects of the kava Industry;
- h) To ensure that there is women representation on the Kava Council.

The review did not include any mention of the ecological impact of kava production on native forests and biodiversity and it appears that key natural resource management and/or conservation agencies who could have flagged these issues, were not consulted.⁵⁸

With regard to the environment, Fiji generally has a strong policy and regulatory framework in place to promote environmental management and sustainable development and it is signatory to a number of international and regional environmental conventions.⁵⁹ The National Biodiversity Strategy and Action Plan (2020 – 2025) is a key planning document that seeks to coordinate inter-agency cooperation in the management of Fiji's biodiversity. While the plan provides a number of actions that relate to the protection of biodiversity through the conservation of forest habitat, the actions are, of necessity, relatively high level, and do not highlight the issue of deforestation due to kava production specifically. This lower level of detail is left to the Implementation Framework which is currently under development. It is the intention that implementation of the NBSAP will be coordinated by the Department of Environment (CBD Focal Point) through a Steering Committee comprising of chairs of seven Thematic working groups. The two Thematic working groups most relevant to dealing with the issue of deforestation linked to the kava industry are the Forest Conservation working group (chaired by the Ministry of Forests) and the Species Conservation Working Group, chaired by the Species Working Group. It is not clear to what degree these working groups have adopted the issue as one of their key work areas.

Of direct relevance to the national policy framework is the Green Growth Framework for Fiji that was introduced by government in 2014.⁶⁰ Through acknowledging the increasing impact of development processes on the environment, the framework seeks to enable a paradigm shift away from 'business as usual' to produce change that is transformative and based, amongst others, on the internalisation of environmental risks and auditing into development processes. While implementation and coordination of the Framework has not been without challenges, it remains a key government document relating to sustainable development and is one that could guide transformative change towards ecological sustainability if adopted by the kava industry.

55 Mejia, C. 2019. A New Take on Large-Scale Agroforestry Systems in Cocoa. World Cocoa Foundation. Blog; The World Bank. 2017. Eliminating Deforestation from the Cocoa Supply Chain. Washington.

56 Bill No. 24 of 2016

57 Update: The Bill has been handed back to Parliament and is undergoing preparation for its second reading. Ministry of

58 Agriculture pers comm. 14/07/2022

Standing Committee on Natural Resources. 2018. Review of the Kava Bill. Parliamentary Paper No 14 of 20.

59 Government of Fiji. 2018. Fiji's 6th National Report to the Convention on Biological Diversity.

60 Government of Fiji. 2014. A Green Growth Framework for Fiji. Restoring the balance in development that is sustainable for our future.

Fiji's REDD-Plus Policy was endorsed by the Cabinet in 2010. The policy aims, amongst others, "to support the socio-economic development of forest resource owners and local communities; and the conservation of Fiji's natural forests and the valuable ecosystem services they provide and biological diversity and contribute to meeting Fiji's international commitments under the CBD (the Convention on Biological Diversity) and UNCCD (United Nations Convention to Combat Desertification)".⁶¹ Relevant programme goals include: Reducing the loss of forest from the expansion of agricultural lands and other land use change; Protecting indigenous forest areas of high cultural, biological diversity and ecosystem services value; and Increasing agroforestry activities on non-forest lands. After completing a protracted readiness phase, the programme is now moving towards implementation of the Fiji Forest Emission Reductions (ER) program, with the government having recently signed an agreement with the Forest Carbon Partnership Facility (FCPF), a global partnership of the World Bank, of US\$12.5 million. Payments for forest conservation under REDD+ carbon trading schemes represent an important alternative to kava as an income source for forest land-owning communities in Fiji. However, the value of carbon payments is likely to be considerably less per hectare than can be earned through kava production, potentially reducing the attractiveness of REDD+ to land-owners. A way to overcome this would be to encourage land-owners to relocate kava cultivation outside of forests using adapted and alternative agro-forestry systems, thereby continuing to benefit from kava sales while at the same time earning additional income under the Fiji Forest Emission Reductions (ER) program and/or other more ecologically sustainable forest land-uses such as eco-tourism and/or conservation leases.

ii. Aspects of the framework preventing the transition towards sustainable and responsible practices and possible measures to alleviate them

Transition towards sustainable and responsible practices in the kava industry will depend on a number of factors, a key one of which is the formalisation of the Industry through the enactment of a revised Kava Bill that strengthens governance structures and aligns itself with forest and biodiversity conservation objectives. The large number of industry participants, their dispersed nature and current general lack of organisation, make it challenging at present to introduce industry-wide initiatives. It is instructive to note that regulation of the sugar industry in Fiji enabled the emergence of effective governance structures, such as the Fiji Sugar Corporation, Sugar Industry Tribunal, Sugar Cane Growers Council, the Sugarcane Research Institute of Fiji, and cane-grower associations and cooperatives. In partnership with the Fiji Sugar Corporation, the well-organised cane-grower associations have been instrumental in introducing and administering Fairtrade certification for the industry, which has seen premium prices being offered to farmers in exchange for adherence to, amongst others, good environmental practices. In addition, the sugar industry in Fiji functions on a contractual 'outgrower' model with milling, processing and exporting dominated by the Fiji Sugar Corporation. Outgrower models tighten the vertical integration of value chains enabling the introduction of market-based incentives to change unsustainable farming systems. Similar conditions do not currently exist in the Kava industry which, apart from the handful of large operators, has in recent years been characterised by a rapid increase in the number of small exporters entering the market. A notable recent development, however, is the partnering of the Australian listed company Fiji Kava with the Tutu Training Centre to enter into an out-grower arrangement with its trainees who are each allocated plots on the Tutu farming estate. As described in section 2.4 (i), Tutu is actively promoting more ecologically sustainable kava farming systems on its farm, and sustainability is seen as a key marketing tool for Fiji Kava. Reducing the number of export companies and promoting a greater degree of centralisation in the kava industry with a view to strengthening the vertical integration of value chains through outgrower models would likely enable greater 'control' over the farming practices adopted by kava farmers in favour of forest and biodiversity conservation. On the other hand, however, centralisation risks compromising the current independence of small-holder producers.

Given the impact of kava farming on Fiji's forest estate and associated biodiversity, it may be prudent for the Ministry of Agriculture to revisit its Rural Millionaire and Kava Development programmes that are geared at encouraging and providing incentives to young men and women to take up kava farming. While training in Sustainable

61 Government of Fiji. 2011. Fiji REDD-Plus Policy. Reducing emissions from deforestation and forest degradation in Fiji.

Land Management is often packaged together with these programmes, there is also a need to strengthen skills and commitments by farmers to adopt more ecologically forest and biodiversity-friendly farming systems, such as using agro-forestry systems to plant kava outside of heavily forested and/or Key Biodiversity Areas.

There is also a clear need for agencies tasked with forest and biodiversity conservation to more actively engage with the kava industry as current multi-agency efforts to develop the industry are largely taking place without representation and inputs from the forestry and biodiversity conservation sectors. These agencies are well-placed to advise and guide the industry towards greater ecological sustainability practices and to seek its alignment with national forest and biodiversity-related targets and sustainable development goals.

3. Situation analysis of the Fisheries Sector

Being an island state that is surrounded by vast oceans, Fiji's fisheries sector plays an important role in the livelihood of all Fijians, as it is closely linked to the local and national economy, generates employment opportunities and is an important food source⁶². Its contribution and importance to food security are illustrated in some of the results from previous studies on fish consumption in Fiji:

- Information from household income and expenditure surveys (HIES) conducted between 2001 and 2006 to estimate the patterns of fish consumption in Pacific Island countries, argued that the per capita fish consumption (whole weight equivalent) for Fiji was 15.0 kg per capita per year in urban areas (fresh fish made up 45% of this amount) and 25.3 kg per capita per year in rural areas (66% fresh fish).⁶³
- Localised information for Dromuna, Muaivuso, Mali, and Lakeba, which was collected by SPC, through the ProcFish project, including estimates of per capita fish consumption showed very high consumption of fresh fish at the four sites (Table 6).⁶⁴
- Fijians on average consume between 35 kg and 42 kg per capita of fish per year. Fish consumption is projected to be much higher in fishing villages and maritime island communities where it has been estimated at 113 kg per capita per year.⁶⁵

Table 6: Fishery product consumption at ProcFish sites (kg/person/year)

Village	Fresh fish consumption	Invertebrate consumption
Dromuna	74	4.4
Muaivuso	68	10
Mali	81	13.1
Lakeba	73	10.5
Average across the four sites	74.0	9.5

Source: Friedman et al. (2010)

The fisheries sector contributes revenue, employment, food and source of livelihood for many people in Fiji. The value of Fiji's total domestic exports in 2018 was FJD1,193 million, with fisheries contributing , representing FJD86.1 million, (7.2%).⁶⁶ The contribution of fisheries to nominal GDP of Fiji in 2018 was 0.63%.⁶⁷ Despite coastal fisheries being arguably one of the most important resource sectors in Fiji, it remains undervalued and poorly understood with its value and contribution still based on estimates. The value of coastal fisheries is nevertheless considered to be substantial given its contribution to the protein requirements of the majority of the population, the savings to the economy through import substitution, the livelihood of the people who rely on it for income and employment, and the increasingly threatened nature of the resource due to overfishing and changing environmental conditions.⁶⁸

62 FAO 2022. Fishery and Aquaculture Country Profiles. Fiji. Country Profile Fact Sheets. Fisheries and Aquaculture Division. Rome.

63 Gillett, R. D. 2016. Fisheries in the Economies of Pacific Island Countries and Territories. Pacific Community, Noumea, New Caledonia.

64 Friedman K., M. Kronen, A. Vunisea, S. Pinca, K. Pakoa, F. Magron, L. Chapman, S. Sauni, L. Vigliola, E. Tardy and P. Labrosse. 2010. Fiji Islands country report: profiles and results from survey work at Dromuna, Muaivuso, Mali and Lakeba (September to November 2002, April to June 2003, June and July 2007, and February 2009). Pacific Regional Oceanic and Coastal Fisheries Development Programme, Secretariat of the Pacific Community, Noumea, New Caledonia.

65 Gillett, R., A. Lewis, and I. Cartwright. 2014. Coastal Fisheries in Fiji: Resources, Issues, and Enhancement of the Role of the Fisheries Department. Gillett, Preston and Associates for the David and Lucille Packard Foundation, Suva. 60pp

66 Ministry of Fisheries. 2021. Annual Report 2018-2019. Parliamentary Paper 37/2021. Parliament of Fiji, Suva, Fiji.

67 Fiji Bureau of Statistics. 2019. Fiji's Gross Domestic Product 2018. Release Number: 72, Fiji Bureau of Statistics, Suva, Fiji

68 Gillett, R. D. 2016. Fisheries in the Economies of Pacific Island Countries and Territories. Pacific Community, Noumea, New Caledonia

An economic valuation study conducted by IUCN in 2015⁶⁹ estimated the total production of the subsistence fishery in Fiji at 15,385 mt, with a total national value of FJD59 million. For small-scale inshore commercial fisheries, a total national value of FJD14-FJD53 million was estimated, with the actual volume of commercial production less clear.

In this situation analysis, two important points should be noted:

- There has been a decline in research on coastal fisheries at the national level compared to two decades ago. Current studies mostly focus on site or divisional level and are conducted mostly by conservation NGOs.
- Since 2004, the detailed reporting of catches used by the Ministry of Fisheries has been replaced by an estimated summary reporting approach, which has resulted in a shortfall of fisheries information.

3.1. Major characteristics and challenges affecting the coastal fisheries sub-sector

Fiji's fisheries sector consists of three sub-sectors including coastal fisheries, offshore fisheries and aquaculture. Coastal fisheries is further divided into artisanal and commercial and subsistence. The key distinction between subsistence and artisanal and commercial fisheries is as follows.⁷⁰

- Subsistence fishery – Fishing is predominantly for consumption, customary obligations and sharing of catch to friends and relatives
- Artisanal and Commercial fishery – Fishing predominantly for selling.

Apart from the differences in the end users of coastal fisheries catch, it is important to note that commercial and subsistence coastal fisheries are similar in many ways as they are both managed or developed primarily at the village or community level, but within an economic and policy context at a national scale⁷¹.

In addition, both fisheries use similar fishing methods, predominantly hand-lining, speargun fishing and gill-netting. Other methods of fishing include the use of fish traps (both traditional and modern traps), fish fences, gillnets, hand nets, fish drives, spears, poisonous plants (such as derris roots) and fish stupeficient, line trawling, reef gleaning and skin diving (especially for shellfish and sea cucumber).

Gleaning on reefs is mainly done by women and target shellfish, sea cucumbers, octopus, worms, sea urchins, eels and small fish, while men dominate hand-line fishing, skin diving and spear fishing⁷². Moreover, both commercial and subsistence fishers target the same fishing grounds, which include mangroves, estuaries, lagoons, shorelines, fore-reef, reef-flats and outer slopes of the reefs to abyssal depths and deeper waters beyond the outer reef.

69 Gonzalez R., V. Ram-Bidesi, N. Pascal, L. Brander, L. Fernande, J. Salcone, and A. Seidl. 2015. Economic Assessment and Valuation of Marine Ecosystem Services: Fiji: A Report to the MACBIO project. GIZ/IUCN/SPREP, Suva.

70 Ministry of Fisheries. 2021. Annual Report 2018-2019. Parliamentary Paper 37/2021. Parliament of Fiji, Suva, Fiji.

71 Gonzalez, R., Ram-Bidesi, V., Leport, G., Pascal, N., Brander, L., Fernandes, L., Salcone, J. and A. Seidl. 2015. National marine ecosystem service valuation: Fiji. MACBIO (GIZ/IUCN/SPREP): Suva, Fiji. 91 pp

72 Cakacaka A., Jupiter SD, Egli DP, Moy W. 2010. Status of fin fisheries in a Fijian traditional fishing ground, Kubulau District, Vanua Levu. Wildlife Conservation Society-Fiji Technical Report no. 06/10. Suva, Fiji, 21 pp.

Table 7 shows the wide range of coastal fisheries resources that are targeted by coastal communities as captured in a study by Gillet et al. (2014).⁷³

Table 7. Important coastal fisheries resources of Fiji

Fin-fish	Invertebrate	
mullet	sea cucumbers	shallow marine prawns
emperors	mangrove crab	trochus
thumbprint emperor	lobster	edible seaweeds ark shell
groupers	sea urchins	other edible molluscs
parrotfish	coconut crab	collector's shells
green hump-head parrotfish	brown land crab	cephalopod molluscs
rabbitfish	giant clams	ornamental coral
chub mackerel	black lip pearl oyster	black coral
aquarium fish	deep-water marine prawns	
sharks and rays	banded prawn-killer	
turtles		
large coastal pelagic fish		
small coastal pelagic fish		

Fishing licences are required from those who engage in commercial fishing activities. The process involves seeking consent from the legal custodians of the inshore fishing grounds (qoliqoli), and then applying for the right to fish to the Divisional Commissioner's Office. The Commissioner will then issue a fishing permit, which might include certain conditions to ensure ecological sustainability and meeting national legislations requirements. Once all the requirements are fulfilled, the Ministry of Fisheries will then issue the fishing license.⁷⁴

Despite coastal fisheries being arguably one of the most important resource sectors in the Fiji economy, it remains undervalued and poorly understood with its value and contribution still based on estimates and perceptions. The value of coastal fisheries is nevertheless substantial given their contribution to the protein requirements of the majority of the population, the savings to the economy through import substitution, the livelihood of the people who rely on it for income and employment, and the increasingly threatened nature of the resource due to overfishing and changing environmental conditions.⁷⁵

Estimating the amount of catch in Fiji's coastal commercial fisheries is extremely difficulty due to the hundreds of landing sites and thousands of fishers.⁷⁶ Most of the landings are for the domestic markets, but some high value species, such as snappers and lobsters, are exported. A major issue in the protection of biodiversity in Fiji's coastal commercial fisheries is the extreme difficulty of controlling the amount of fishing effort, especially on high value species and in areas close to urban centres. The domestic flow of the coastal commercial catch around the country is considerable; a recent study showed that 70% of the coastal fish from northern Vanua Levu is marketed in Suva.⁷⁷

There is very little quantitative data available on the extent and intensity of threats to Fiji's marine resources. This is due to the large size of its marine area, the lack of knowledge of the resources, and insufficient data on the use of marine species and environmental impacts of fishing⁷⁸. However, during

73 Gillet, R., Lewis, A and Cartwright, I. 2014. Coastal Fisheries in Fiji: Resources, issues, and enhancing the role of the Fisheries Department. Ministry of Fisheries, Suva, Fiji

74 Reddy, C. 2019. Indo-Fijian Fishing Communities: Relationships with Taukei in Coastal Fisheries Thesis. Environment Studies 591, School of Geography, Environment and Earth Sciences, Victoria University of Wellington, New Zealand

75 Gillett, R. D. 2016. Fisheries in the Economies of Pacific Island Countries and Territories. Pacific Community, Noumea, New Caledonia

76 Ministry of Fisheries. 2021. Ministry of Fisheries Annual Report 2018 – 2019. Suva, Fiji

77 Sadovy de Mitcheson Y., Mangubhai S., Witter A., Kuridrani N., Batibasaga A., Waqainabete P., Sumaila R. 2018. Value Chain Analysis of the Fiji Grouper Fishery. Report of Science and Conservation of Fish Aggregations (SCRFA), United States, pp 57

78 Gillett, R., A. Lewis, and I. Cartwright. 2014. Coastal Fisheries in Fiji: Resources, Issues, and Enhancement of the Role of the Fisheries Department. Gillett, Preston and Associates for the David and Lucille Packard Foundation, Suva. 60pp; Gillett, R. D. 2016. Fisheries in the Economies of Pacific Island Countries and Territories. Pacific Community, Noumea, New Caledonia

the BIODIV stakeholder consultations, there was a general consensus that the coastal fisheries resources are in a very fragile state. The majority of the threats to marine resources in Fiji today are unsustainable human induced practices and most of these activities have severe consequences to coastal fisheries abundance and sustainability.

A list of threats has been compiled (see below) from the stakeholder consultations conducted for the BIODIV project. Each of these activities may independently threaten ecosystem structure and function. However, more significant impacts are often the result of the compounded effects of multiple activities. Some of the changes caused by periodic climate events are not necessarily permanent. However, direct human-induced stresses to habitats intensify the effects of these events or limit the recovery capability of marine ecosystems.⁷⁹

Human induced threats in Fiji include:

- Overfishing of coastal fisheries
- Pollution (nutrient and chemical pollutants)
- Use of destructive fishing methods (derris root, dynamite, gillnet etc.)
- Coral harvesting and mangrove cutting
- Coastal development

Widespread over-exploitation of many target species in Fiji is caused by the removal of breeding age individuals which has a significant and direct impact on the sustainability of the stock. With reduced numbers of these target species, fishing pressure often increases as fishers search previously untouched and remote areas, or develop more aggressive and destructive fishing methods.⁸⁰ Illegal fishermen from other parts of Fiji go as far as the Lau Group, islands in the Lomaiviti province, and Kadavu Islands to fish as a result of scarcity of resources in their fishing areas. These fishermen fish illegally in these waters and are equipped with sophisticated fishing gear that enable quick extraction of target species and departure from the area before coastal communities are aware or feel suspicious of their activities.⁸¹

In coastal communities in Fiji, the need for cash to meet the growing social and household obligations is a major factor that contributes to overfishing.

The use of destructive fishing methods compounds the pressure on coastal fisheries. Regulation 8 of 1992 of the Fisheries Act of Fiji (1942) states that:

No person shall take, stupefy or kill any fish in any lake, pool, pond, river, stream or in the sea use of any following substances or plants:

- a). *any chemical or chemical compound;*
- b). *any substance containing derris;*
- c). *any substance containing the active principal of derris, namely rotenone;*
- d). *any plant or extract of or derivative from any plant, belonging to the genera Barringtonia, Derris (Duva), Euphorbia, Pittosporum or Tephrosia or place any such substances or plants in water for the purpose of taking, stupefying or killing of any fish.*

Although these activities are prohibited, they are still prevalent and widespread in Fiji.⁸² Destructive fishing practices are employed in most parts of Fiji to obtain larger harvests in shorter periods of time to meet commercial demands locally and overseas, causing unnecessary damage to habitats such as coral

79 Secretariat of the Pacific Regional Environment Programme (SPREP). 2013. State of conservation in Fiji: Country report. SPREP Library Cataloguing

80 Elodie, F and Breckwoldt, A. 2018. Small-scale managed marine areas over time: Developments and challenges in a local Fijian reef fishery. *Journal of Environmental Management* 220: 253-265.

81 Rasoqosoqo, L. 2011. Illegal Fishing Upsets Islanders. *Fiji Sun Online* (<https://fijisun.com.fj/2011/01/29/illegal-fishing-upsets-islanders/>), accessed on 12th June, 2022

82 Sekinairai, A. T. 2021. Understanding human impacts on the marine environment in Fiji: insights from an ODEMM conceptual model and semi-structured interviews. World Maritime University Dissertations. 1739.

reefs. Other destructive fishing practices employed by some fishermen in Fiji are the improper use of gillnets, SCUBA (Self Contained Underwater Breathing Apparatus) and hookah gear, and the fishing of undersized fish.⁸³

The use of fishing nets, particularly small-mesh gillnets, is a very effective method of fishing, which has caused the overfishing of certain areas in Fiji. Using undersized nets (measuring less than 2 inches) leads to the harvesting of undersize fish. These nets are left overnight in the hope of catching more fish. The combination of the above activities causes drastic effects that determined the sustained productivity of the marine environment.

In addition to the high demand for coastal fisheries resources in Fiji, the export market has also been a driving force in undermining the ecological sustainability of marine biodiversity. In recent years, however, about 90% of the fisheries exports of the country has been sourced from offshore fisheries⁸⁴. Table 8 shows the 2014 exports, in either pieces or kg.⁸⁵ Important additional information about Fiji's fishery exports is available from a database that is compiled from compulsory coastal fishery export permits and maintained by the Fisheries Department.

Table 8: Coastal Fishery Exports 2014

Coastal fisheries resources	Unit	Total
Aquarium products	Kg	1,169,303
	pcs	736,566
Beche-de-mer	Kg	132,127
	pcs	70
Fish steak (reef fish)	Kg	211
Gastropods	pcs	100
Invertebrate products	Kg	271
Ornamental products	Kg	600
	pcs	2,064,480
Other marine products	Kg	24,823,233
Reef fish	Kg	17,420
Shells	Kg	39,061
	pcs	2,005,676

Source: Fisheries Department (unpublished data)

Companies engaging in the export of coastal fisheries resources need to be certified by the Competent Authority (CA).⁸⁶ Export permits are required for every consignment 48 hours prior to shipment. The application for an export permit needs to be in writing to the Director of Fisheries and the application should provide supporting details including the company details, product details (species, farmed or wild-caught for aquaculture species, final product and storage form, consignment size, frequency of export, detail of harvest areas and suppliers, market designation/destination, contract agreements between exporters, processors and /or suppliers and other stakeholders).

For exporters intending to be involved in exporting species listed under CITES, as stipulated under the Endangered and Protected Species Act, the proponents first need to enquire a CITES permit from the Department of Environment prior to applying for a license or permit to export from the Department of Fisheries. The application for fisheries export permit for products listed under CITES require supporting documents including a CITES certificate/permit, list of species, shipment date, company details, product details (species, farmed or wild-caught for aquaculture species, final product and storage form), consignment size, frequency of export, details of harvest areas, suppliers and destinations.

83 Fiji Environmental Law Association and EDO NSW. 2017. Regulating Fiji's Coastal Fisheries: policy and law discussion paper. USP Press, Suva, Fiji

84 Ministry of Fisheries. 2021. Annual Report 2018-2019. Ministry of Fisheries, Suva, Fiji

85 Gillett, R. D. 2016. Fisheries in the Economies of Pacific Island Countries and Territories. Pacific Community, Noumea, New Caledonia

86 Ministry of Fisheries. 2016. Ministry of Fisheries Investment Guide August 2016 – July 2017. Ministry of Fisheries, Suva, Fiji

Important to note that marine species listed under CITES are banned from being exported as commercial fisheries products, and can only be exported for research purposes. Coastal fisheries commodities listed under CITES that can be exported for research purposes are presented in Table 9. From Table 9, it can be noted that the exportation of CITES species for research purpose is well managed using the quota system, with the Ministry of Environment playing an important role in the enforcement and compliance of this system.

Table 9: CITES fisheries commodities and export requirements

Coastal fisheries commodities	Important notes for exporting
Live rock, hard corals, giant clams	<p>Requirements: List of Species, shipment date and quantity</p> <p>Ministry of Fisheries checks the list of species under CITES and then deducts it from annual quota which is set by the Research Division and submitted to the Management Authority and the Scientific Council for submission to the CITES Secretariat.</p> <p>Fisheries issues CITES permit and a fisheries export permit</p>
Other aquarium species not listed under CITES, ornamental fish, soft corals, invertebrates	<p>Companies send in their application and then Fisheries issues fisheries export permit.</p> <p>All fisheries commodities require a fisheries export permit</p>
Turtles, humphead wrasse	<p>Permits are only issued for scientific and educational purposes</p> <p>Permits are only issued through an exemption letter from PS Fisheries</p> <p>Upon exemption, Fisheries then issue CITES permit and fisheries export permit.</p>
Trochus	<p>Permits are only issued for scientific and educational purposes</p> <p>Permits are only issued through an exemption letter from PS Fisheries</p> <p>Upon award of exemption, a fisheries export permit is then issued to accompany the shipment.</p>
Triton, giant helmet	Totally banned for taking, selling or offering or exposing for sale, or export.
Beche-de-mer	<p>Companies send in their application, together with the size of their consignment</p> <p>Compliance officers are accompanied by Enforcement Officers during visits to companies to inspect if species are of the correct exporting size and weight</p> <p>Licensing for the issuing of fisheries export permit</p>

Source: Ministry of Fisheries Investment Guide August 2016 – July 2017

For the period 2018–2021, none of the coastal fisheries resources listed under CITES were exported.⁸⁷ As Fiji considers the volume of fish products intended for export markets, it will be important to weigh the level needed to meet domestic demand. Forecasts suggest that coastal fisheries will not have sufficient capacity to supply the fish needed to meet future food security needs in Fiji.⁸⁸ A major issue in the protection of biodiversity in Fiji's coastal subsistence fisheries is identifying the most appropriate way to provide assistance to Fiji's communities within the 410 fishing rights areas to ensure sustainability of their fishery resources and associated biodiversity.

⁸⁷ CITES website. https://cites.org/eng/resources/quotas/export_quotas?field_country_target_id=59&field_species_target_id=&field_specimens_target_id=&field_date_value%5Bmin%5D=2000-01-01&field_date_value%5Bmax%5D=2022-12-31

⁸⁸ Bell et al., 2011. Vulnerability of tropical Pacific fisheries and aquaculture to climate change. Noumea, New Caledonia, Secretariat of the Pacific Community.

From the situation analysis presented above, the challenges posed by unsustainable fishing practices have caused depletion in coastal fisheries resources. The marine resources in Fiji have been depleted due to uncontrolled subsistence, artisanal and commercial fishing pressures coupled with the increase in the size of fishing communities. In order to reverse this trend, stakeholders in the coastal fisheries sector need to work together and design strategic interventions to ensure ecological sustainability.

3.2. Mapping of actors and stakeholders

Similar to kava production, there are multiple actors and stakeholders in the coastal fisheries market 'value chain'. These include actors that directly participate in the sub-sector as well as a number of actors we refer to as 'Enablers'; i.e. agencies providing technical support to the industry through policy development, research, extension, and trade facilitation.

Table 10 below lists those actors that are directly involved in the value chain, with a description of their contributions, costs incurred, rewards and risks. The coastal fisheries market value chain is depicted diagrammatically in Figure 18.

Table 10. Actors involved in the Coastal Fisheries Value Chain

Actor	Contribution	Costs Incurred	Rewards	Risks
Fishers ⁸⁹ including fishermen and women fishers	Uses various types of fishing equipment and techniques to catch fish and marine life to be sold at markets or to middlemen or fused or local livelihood.	Cost of fuel and fishing gear, equipment, or labour	The quantity of sales and the selling price of fresh or value added coastal fisheries resources,	High competition, resources depletion, management measures such as bans on use of resources, natural hazards, weather, disease, theft.
Traders/ Middlemen ⁹⁰	Provide markets and value-adding options and determine the conditions of the trade and the quality, type and price of coastal fisheries products acquired from fishermen. Transport, store, sort, grade Package, sell to end user or Exporter and determine the quality of product and the price	Cost of fisheries products, fishing equipment, storage facilities, labour for sorting, grading, package and transport	Determine price of coastal fisheries resources sold to end users (retailers, consumers, exporters etc.)	Periods of oversupply, Quality control and standard maintained. Consistency of supply and demand,
Land transporters ⁹¹	Transport products from landing sites to	Cost incurred to acquire and provide infrastructure,	Control of market, charges paid by	Low supply, disruption of supply chain, delays, high costs of operation,

89 These can also include Fishermen Association and some notable ones include the Duavata Fishermen Association, which is comprised of 102 fishermen from the four districts of Wainunu, Vuya, Nadi and Dama, Kadavu Fishermen Association, Lakeba Fishermen Association and Nadi Fishermen Association

90 Middlemen in Fiji can be categorized into community-based middlemen and urban centers middlemen. Community-based middlemen are usually the primary middlemen that sell to urban markets or to secondary middlemen in urban centers. Urban centers middlemen are mostly secondary middlemen but at the same time can be primary middlemen with fishermen selling their catch directly to them. Urban centers middlemen are required to have business license in order to operate.

91 Notable examples include Williams and Goslings, DHL Courier, in addition to freezer trucks that middlemen use on their return trip after offloading its cargo in one of the urban centres

Actor	Contribution	Costs Incurred	Rewards	Risks
	middlemen and markets within the country Packaging of products and transfer products to main centres, ports and Nadi Airport	provide infrastructure, load and transport cargo to local market and to Nadi Airport for export	charges paid by Middlemen and exporters	supply chain, delays, high costs of operation, breakdowns
Airfreight and seafreight operators	Process and organise process to meet international safety and trade standards Transport cargo from ports and airports to export destinations	Storage facilities, freight costs, electricity, labour and management, etc	Freight charges	Moderate: post shipment losses, claims and delayed payments from consignees
Exporters and wholesalers ⁹²	Clears, stores, and distributes the product to retailers	Price of product paid to exporter, clearance, handling and distribution costs	Prices of products sold to consumers and retailers	Quality issues Price undercutting from competitors
Consumers	Customer demands need to be understood by all actors in the chain	Retail price of coastal fisheries products	Consumers for all coastal fisheries resources that can support a market	Uncertainties About supply, quality and price

Key actors in the coastal fisheries market value chain are depicted in Figure 18. The coastal fisheries chains begin with the fishers that participate in the many different kinds of fisheries. As with kava, fish and marine invertebrates are either sold locally, directly to urban markets, or indirectly to urban markets through the use of traders, agents or 'middlemen'. Apart from supplying urban informal markets, these traders, agents and 'middlemen' also supply fish produce to the 67 currently registered exporters and to domestic retail outlets.

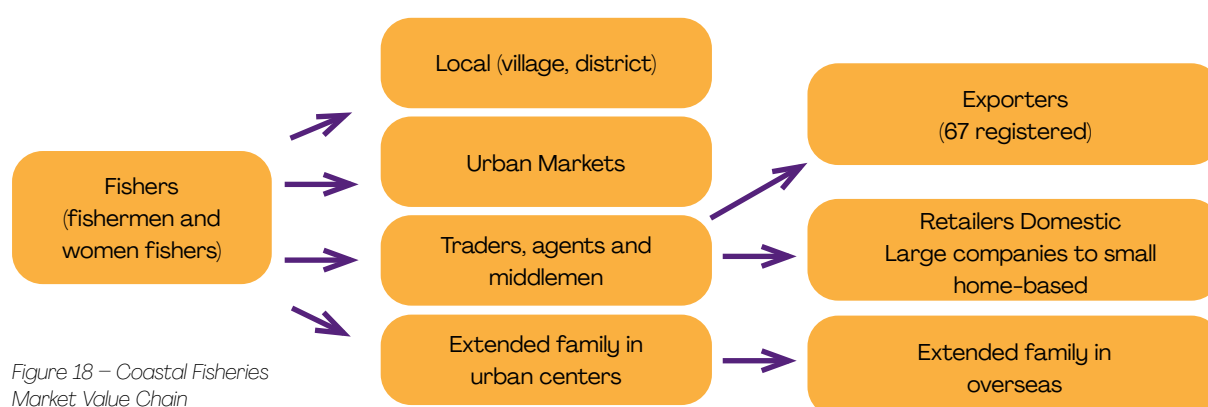


Figure 18 – Coastal Fisheries Market Value Chain

The stakeholders in the value chain for coastal fisheries are extremely fragmented and there is an absence of organised groupings that represent their interests.

Table 11 below provides a list of all the actors that work to enable the growth and economic sustainability of the coastal fisheries sub-sector.

92 Some of the key exporters and wholesalers of coastal fisheries resources in Fiji include including Balaji Gold Industries, Feejee Dreams, Fish Onvest (Fiji) Limited, Fortitude Enterprise, Fresh Fish Exporters, Gold Hold Company, Golden Ocean Fish Ltd, Jiko Fisheries, Ocean Quest (Fiji) Ltd, Pacific Prawns, Sea Cucumber Seafood Supplier, Sealand Processors (Fiji), Tebara Halal Meat, Tiare Ltd, Trans Pacific Seafoods and Vuaira Fisheries.

Table 11. Enablers of Coastal Fisheries

Enablers	Role played in the Industry
Ministry of Fisheries	MoF is the lead Government agency and first point of contact for coastal fisheries and offshore areas. Responsible for fisheries policy development and implementing fisheries legislation (Fisheries Act and Offshore Fisheries Management Decree) to regulate sustainability of and management of different fisheries resources, including surveys of all iQoliqoli (both coastal and freshwater).
Fiji Police Force & Fiji Navy Force	Responsible for law enforcement, security and defense of the country and in the policing and enforcement of fisheries regulation and policy all over Fiji.
Department of Environment	Is mandated to establish environment policies, ensure environmental safeguards in development projects, managing pollution, wastes and hazardous substances; sustainable management of natural resources i.e. soils, water, watersheds, flora and fauna, land use, indigenous ecosystems and human health; air quality monitoring and protection; and focusing on clean industrial production. They are also responsible for overseeing the protection of indigenous ecosystems and biological diversity.
Divisional Commissioner's Office	Issue fishing license to fishermen who have fulfilled the requirements.
SPC Coastal Fisheries Programme	Research and technical support to the coastal fisheries.
Fiji Development Bank	Provides low-interest fishing loans to fishermen and it excludes the purchase of second hand outboard motors. Interested fishermen need to demonstrate fishing experience appropriate to the loan application.
Food and Agriculture Organisation (FAO)	Provides technical support to Agriculture, Forestry and Fisheries sectors, including coastal fisheries.
The World Conservation Union- IUCN -	IUCN has been quite active in Fiji in implementing conservation concepts and the preparation of Conservation Area Strategy. IUCN had developed their own mechanism or Planning Process for MPA sites.
Worldwide Fund for Nature (WWF) Fiji Program	WWF-Fiji is a member of the WWF International Network, one of the world's independent conservation organizations. Has worked on conservation projects in Southern Lau especially for Ono and Kabara Islands. Lead marine conservation work in Macuata and Ba Provinces and in some other parts of Fiji
Wildlife Conservation Society (WCS)	WCS has established multiple-community conservation initiatives and linked them with the provincial government, in some cases providing the platform for community-government coordination. WCS has trained community rangers to protect forests and wildlife. Led marine conservation work in Bua province
Coral Reef Alliance (CORAL)	CORAL is an international alliance that has adopted a multi-pronged approach to restoring and protecting coral reefs in partnership with the communities living nearest to the reefs.
Conservation International (CI)	CI is a leading international conservation NGO with a mission to protect nature, and its biodiversity, for the benefit of humanity. Country office based in Suva. CI is supporting the Lau Seascape project and leading marine conservation work in Lau Province and the Ringgold Reef system
Partner in Community Development (PCDF)	Lead marine conservation work in Lomaiviti province

Enablers	Role played in the Industry
Pacific Blue Foundation	Pacific Blue Foundation is a non-profit public benefit charitable trust. Pacific Blue Foundation provides basic research, education, and dissemination of sustainable practices in coastal regions with the ultimate goal of preserving and promoting the biological and cultural diversity of the region.
Marine Ecology Consulting	Lead marine conservation work in Waitabu, Taveuni
Global Vision International (GVI)	Lead marine conservation work on Beqa Island, Dawasamu and part of Lomaiviti
Mamanuca Environment Society (MES)	Lead marine conservation work within the Mamanuca group of islands
Fiji Locally Managed Marine Areas (FLMMA) Network	A network leading locally managed marine areas conservation in the Fiji and the Region. It promotes locally managed marine areas that are undertaken by the members of the Network. FLMMA had worked in outer islands in central Lau and other islands in other provinces in Fiji. FLMMA Network works to promote and encourage the preservation, protection and sustainable use of marine resources in Fiji by the customary owners and traditional users of marine resources. FLMMA secretariat is based in Suva and leads marine conservation work in Kadavu, Ra, Nadroga and Lomaiviti Provinces
Women in Fisheries Network Fiji	WiFN was set-up as a network of interested scientists, gender and development scholars with a common interest in addressing the involvement of women in the fisheries sector.
Fiji Environmental Law Association (FELA)	FELA's purpose is to promote the sustainable management of natural resources through law.

3.3 Pressures triggered by overfishing on biodiversity and impact

i. Current state of biodiversity and desired state in activity zones of the sector

Based on previous marine ecological assessments,⁹³ the provinces with high levels of marine biodiversity are Macuata, Bua, Ba, Ra, Lomaiviti, Kadavu, Tailevu, Lau and Nadroga/Navosa (Mamanuca Group) (Figure 19). These provinces are characterised by the existence of marine key biodiversity areas. Table 12 provides an overview of the Key Biodiversity Areas together with a listing of the IUCN Red List Threatened Species occurring in each KBA.

93 Mangubhai, S., Sykes, H., Lovell, E., Brodie, G., Jupiter, S., Morris, C., Lee, S., Loganimoce, L., Rashni, B., Lal, R., Nand, Y and Qauqau, I. 2019. Fiji: Coastal and Marine Ecosystems. In Chapter 35 - Volume II: the Indian Ocean to the Pacific 2019, Pages 765-792. World Seas: an Environmental Evaluation (Second Edition); Sykes H., Le Grand J, Davey K, Kirmani SN, Mangubhai S, Yakub N, Wendt H, Gauna M, Fernandes L. 2018. Biophysically special, unique marine areas of Fiji. MACBIO (GIZ, IUCN, SPREP), Wildlife Conservation Society and Fiji's Protected Area Committee (PAC); Suva.; Jones, S. 2009. A Long-Term Perspective on Biodiversity and Marine Resource Exploitation in Fiji's Lau Group. Pacific Science . Available at DOI:10.2984/049.063.0408

94 Andradi-Brown D.A., Veverka L., Free B., Ralifo A., Areki F. 2022. Status and trends of coral reefs and associated coastal habitats in Fiji's Great Sea Reef. World Wildlife Fund US, WWF-Pacific Programme, and Ministry of Fisheries Fiji. Washington, D.C. & Suva. DOI: 10.6084/m9.figshare.13228910

95 WWF Fiji Program. 2018. Ramsar Information Sheet: Fiji Qoliqoli Cokovata. https://rsis.ramsar.org/RSapp/files/RSrep/FJ2331RIS_1802_en.pdf

Table 12. Marine Key Biodiversity Areas (KBAs)

Marine key biodiversity area	Provinces involved	Specific Location and Biodiversity Importance	Globally Threatened Species (Vulnerable- VU, Endangered- EN, Critically Endangered- CR) on the IUCN Red List, (Near Threatened- NT and Least Concern- LC also included)
Great Sea Reef (GSR) Estimated area size is 25,800 km ²	Ba, Macuata, Ra and part of Bua and Nadroga-Navosa provinces (Mamanuca Group)	<p>Over 450 km long from western Viti Levu to the north-eastern tip of Vanua Levu. From the western tip, the reef system splits from the fringing reefs of Viti Levu to pass through the Mamanuca Islands, before extending north through the Yasawa Islands. From the northern tip of the Yasawa Islands the reef extends eastward, crossing north of the Vatu-i-Ra passage and across the northern edge of Blight Waters before reaching the north coast of Vanua Levu and running offshore of Bua Province then continues along Macuata Province before merging with the fringing reefs of eastern Vanua Levu on Udu Point.</p> <p>GSR has approximately 55% of the known coral reef fish in Fiji (with a predicted actual value of 80%), 74% of the known corals found in Fiji and a total of 40% of all the known marine flora and fauna in the Fiji Islands. Area also has 117 species of sponges, 31 species of coelenterate and 12 species of ascidian, which is the highest of any other reef area in Fiji.</p>	<p>A number of aquatic species listed on the IUCN Red List (VU, EN, CR, LC, NT) including:⁹⁵ CR: Hawksbill Turtle (<i>Eretmochelys Imbricate</i>) EN: Humphead wrasse (<i>Cheilinus undulatus</i>), Green turtle (<i>Chelonia mydas</i>), <i>Holothuria scabra</i> VU: Humphead parrotfish (<i>Bolbometapon muricatum</i>), Giant grouper (<i>Epinephelus lanceolatus</i>), Tawny nurse shark (<i>Nebrius ferrugineus</i>), <i>Actinopyga mauritiana</i>, Loggerhead Turtle (<i>Caretta caretta</i>), Leatherback (<i>Dermochelys Coriacea</i>), <i>Holothuria fuscogilva</i>, Sperm Whale (<i>Physeter microcephalus</i>), disk coral (<i>Turbinaria Heronensis</i>) NT: Grey Reef Shark (<i>Carcharhinus Amblyrhynchoides</i>), Estuary cod (<i>Epinephelus coioides</i>), Brown-marbled grouper (<i>Epinephelus fuscoguttatus</i>), Camouflage Grouper (<i>Epinephelus polyphekadion</i>, Leopard coral grouper (<i>Plectropomus leopardus</i>), Bicolored foxface (<i>Siganus uspi</i>), Ribbontail stingray (<i>Taeniura lymma</i>), White-tip reef shark (<i>Triaenodon obesus</i>), <i>Echinomorpha nishihirai</i> LC: Fiji blenny (<i>Ecsenius fijiensis</i>), Canary fangblenn (<i>Meiacanthus Oualanensis</i>), Minke whale (<i>Balaenoptera acutorostrata</i>), Humpback whale (<i>Megaptera novaeangliae</i>). Grouper (<i>Epinephelus polyphekadion</i>, Leopard coral grouper (<i>Plectropomus leopardus</i>), Bicolored foxface (<i>Siganus uspi</i>), Ribbontail stingray (<i>Taeniura lymma</i>), White-tip reef shark (<i>Triaenodon obesus</i>), <i>Echinomorpha nishihirai</i> LC: Fiji blenny (<i>Ecsenius fijiensis</i>), Canary fangblenn (<i>Meiacanthus Oualanensis</i>), Minke whale (<i>Balaenoptera acutorostrata</i>), Humpback whale (<i>Megaptera novaeangliae</i>).</p>
Vatu-i-Ra Seascape Estimated area size is 14,293 km ²	Bua, Lomaiviti, Tailevu and Ra	<p>Vatu-i-Ra Seascape is located between the two main islands of Fiji and contains healthy coral reef systems, a multitude of relatively pristine and untouched islands, and a deep central elongated canyon which drops to depths of more than 1000m. The area generates active currents, moving from the south to the northwest, which create dynamic oceanography and high productivity. This extraordinary marine area comprising of mosaic of mangroves, seagrass meadows, reefs, deep channels, and seamounts is one of the Pacific's last great wild places.⁹⁶</p>	<p>A number of aquatic species listed on the IUCN Red List (CE, EN, VU, NT, LC) including⁹⁷: CE: Hawksbill Turtle (<i>Eretmochelys Imbricate</i>) EN: Humphead wrasse (<i>Cheilinus undulatus</i>), Green turtle (<i>Chelonia mydas</i>), <i>Holothuria scabra</i> VU: Humphead parrotfish (<i>Bolbometapon muricatum</i>), Tawny nurse shark (<i>Nebrius ferrugineus</i>), <i>Actinopyga mauritiana</i>, Loggerhead Turtle (<i>Caretta caretta</i>), Leatherback (<i>Dermochelys Coriacea</i>), <i>Holothuria fuscogilva</i>, Sperm Whale (<i>Physeter microcephalus</i>), NT: Grey Reef Shark (<i>Carcharhinus Amblyrhynchoides</i>), Brown-marbled grouper (<i>Epinephelus fuscoguttatus</i>), Camouflage Grouper (<i>Epinephelus polyphekadion</i>, Leopard coral grouper (<i>Plectropomus leopardus</i>), Bicolored foxface (<i>Siganus uspi</i>), Ribbontail stingray (<i>Taeniura lymma</i>), White-tip reef shark (<i>Triaenodon obesus</i>), <i>Echinomorpha nishihirai</i> LC: Fiji blenny (<i>Ecsenius fijiensis</i>), Canary fangblenn (<i>Meiacanthus Oualanensis</i>), Minke whale (<i>Balaenoptera acutorostrata</i>), Humpback whale (<i>Megaptera novaeangliae</i>).</p>

96 Obura D.O. and Mangubhai S. (2002) Coral Reef Biodiversity in the Vatu-i-Ra Seascape in Fiji. World Wide Fund for Nature – South Pacific Programme, Suva, Fiji. 74 pp.

97 Obura D.O. and Mangubhai S. (2002) Coral Reef Biodiversity in the Vatu-i-Ra Seascape in Fiji. World Wide Fund for Nature – South Pacific Programme, Suva, Fiji. 74 pp.

Marine key biodiversity area	Provinces involved	Specific Location and Biodiversity Importance	Globally Threatened Species (Vulnerable- VU, Endangered- EN, Critically Endangered- CR) on the IUCN Red List, (Near Threatened- NT and Least Concern- LC also included)
Lau Seascape	Lau	The Lau Seascape covers an area of 335,000 square kilometres (129,000 square miles) and represents over a quarter of Fiji's ocean. It is a highly biodiverse in reef fishes, and has 527 species, including six to nine new or potentially new species, as well as several previously known but still undescribed species. ⁹⁸	A number of aquatic species listed on the IUCN Red List (CE, EN, VU, NT, LC) including ⁹⁹ : CE: Hawksbill turtle (<i>Eretmochelys imbricate</i>) EN: Green turtle (<i>Chelonia mydas</i>), Humphead wrasse (<i>Cheilinus undulatus</i>), Great hammerhead shark (<i>Sphyrna mokarran</i>) VU: Giant clams (<i>Tridacna derasa</i> , <i>T. squamosa</i> , <i>T. crocea</i> , <i>T. maxima</i>)
Great Astrolabe Reef	Kadavu	Kadavu's Great Astrolabe Reef is characterized as a large barrier reef system that extends to the North of the island of Kadavu, containing spawning and aggregation grounds for inshore and offshore fisheries. Similarly, the adjacent Kadavu Plateau seamount is associated with incredibly dynamic upwelling areas that are key for major fisheries ¹⁰⁰ .	A number of aquatic species listed on the IUCN Red List including <i>Thunnus albacares</i> ; <i>Acanthocybium solandri</i> ; <i>Megaptera novaeangliae</i> ; <i>Chelonia mydas</i> ; <i>Eretmochelys imbricata</i> ; <i>Tridacna tevoroa</i> ¹⁰¹

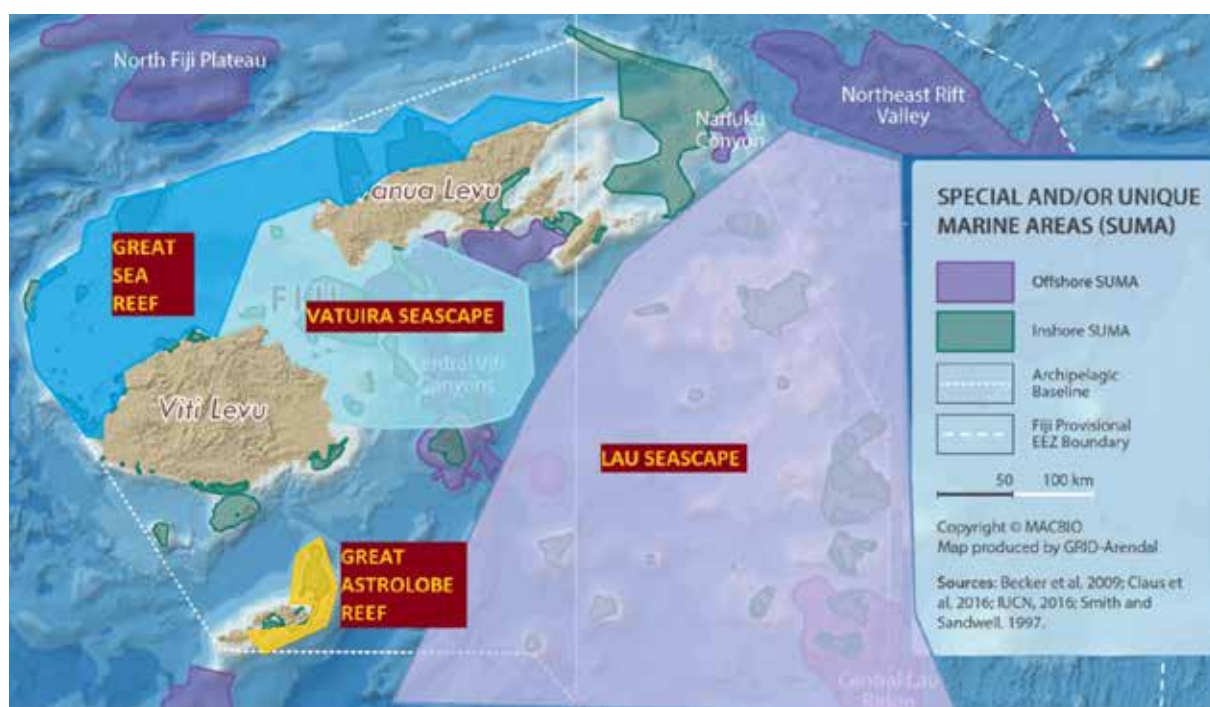


Figure 19 – Marine biodiversity hotspots indicating the Provinces where high levels of marine biodiversity and overfishing overlap include Macuata, Bua, Ba, Ra, Lau, Tailevu, Kadavu and Nadroga/Navosa (Mamanuca Group)) (Source: modified from MACBIO, 2018)

- 99 Miller K, Nand Y, Mangubhai S, Lee S, Naisilisili W, Sykes H. 2018. Marine Biological Surveys of the Northern Lau Group. Report No. 01/18. Vatuvara Foundation and the Wildlife Conservation Society, Suva, Fiji. 46 pp
- 98 Erdmann, M and Allen, G. 2017. Lau Islands expedition finds up to 9 species potentially new to science. <https://www.conservation.org/stories/survey-finds-new-species>
- 100 Miller K, Nand Y, Mangubhai S, Lee S, Naisilisili W, Sykes H. 2018. Marine Biological Surveys of the Northern Lau Group. Report No. 01/18. Vatuvara Foundation and the Wildlife Conservation Society, Suva, Fiji. 46 pp
- Conservation International. 2020. Safeguarding Marine & Terrestrial Biodiversity in Fiji (SAMBIO). https://www.conservation.org/docs/default-source/gef-documents/gef7_pif_fiji_final_updated---october-14-2020-clean28bac6c6b6d63466db0d9b3021607d765.pdf?sfvrsn=6ae7d32a_0
- 101 Sykes H, Le Grand J, Davey K, Kirmani SN, Mangubhai S, Yakub N, Wendt H, Gauna M, Fernandes L. 2018. Biophysically special, unique marine areas of Fiji. MACBIO (GIZ, IUCN, SPREP), Wildlife Conservation Society and Fiji's Protected Area Committee (PAC); Suva.

ii. Direct and indirect pressures

The seven Provinces where the threats from overfishing were greatest included: Macuata, Bua, Ba, Ra, Tailevu, Nadroga/Navosa (Mamanuca Group) and Kadavu. These provinces were prone to overfishing due to easy access to market and high population densities in neighbouring areas (Figure 20). Local depletion of species such as mullet (*Mullidae*), rabbitfish (*Siganidae*), coral grouper, and bumphead parrotfish (*Bolbometapon muricatum*), have highlighted.¹⁰² At the same time, catches of emperors and invertebrates were also declining, and link to possible stocks overfishing.

The GSR itself, roughly provides for one third of the 800,000 people of Fiji who live in the vicinity of the Reef, which includes roughly one tenth of the Fijian population directly reliant on the GSR for subsistence and livelihoods. Possibly over three quarters of all inshore fish supplied to urban markets within the country is primarily sourced from fishing grounds falling within the GSR boundaries. It has been estimated that the ecosystem services provided by coral reefs within the GSR are valued at approximately FJD47.5 million annually, while mangrove-related fisheries production within the GSR is worth FJD19.2 million annually. The inshore fisheries sector within the GSR is worth FJD12–16 million annually.¹⁰³

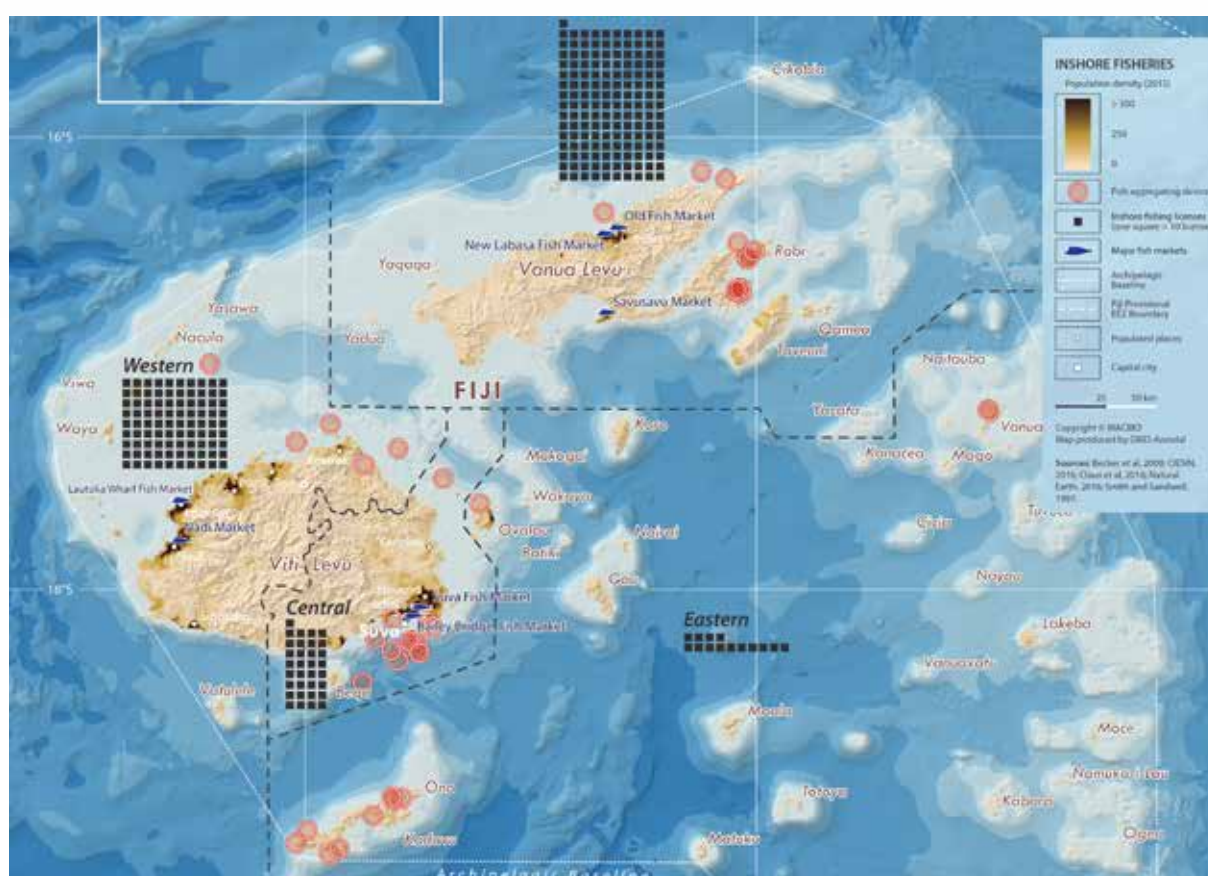


Figure 20 – Inshore fisheries activities in Fiji, including the location of fish aggregating devices (FADs), number of inshore fishing license per administrative region, and the location of major fish markets. (Source: MACBIO, 2018)

Detailed flow of coastal commercial catch from different parts of Fiji is highlighted in Table 13 and is taken from a recent survey¹⁰⁴ on understanding Fiji's domestic fish trade and points on to the earlier statement on the seven provinces under threats from overfishing.

102 Lee, S., A. Lewis, R. Gillett, M. Fox, N. Tuqiri, Y. Sadovy, A. Batibasaga, W. Lalavanua, and E. Lovell. 2020. Fiji Fishery Resource Profiles. Information for Management on 44 of the Most Important Species Groups. Gillett, Preston and Associates and the Wildlife Conservation Society, Suva. 240pp

103 WWF-Pacific. (2017). The Great Sea Reef: weaving together communities for conservation. World Wildlife Fund, Fiji.

104 Gillett, R. and Musadroka, K. 2019. Aspects of Fiji's domestic fish trade. Gillett, Preston and Associates for the David and Lucille Packard Foundation. 30 p.

Table 13. Flow of coastal commercial catch

Market Location	Description on the flow of coastal commercial catch
Western Division	The major flow of fish in the Western Division is from Ba (and to a lesser extent Tavua and Rakiraki) to markets in Lautoka, Namaka, Nadi and Sigatoka, representing a movement of fish from areas with excess labour and low-income farming to areas where there is much cash employment and tourism. Another major feature of the fish trade is that fishers who fish near resorts (or pass close to them while transiting from the fishing areas) may use the opportunity to sell as much fish at premium prices to the resorts, before proceeding to sell the remaining fish at lower prices at landing sites and markets. Only a very small amount of fish is sent from the Western Division to Suva.
Eastern Division	The Eastern Division is characterised by a small and dispersed population, lack of sites where significant amounts of fish are marketed, poorly developed transport connections to Suva, relatively low exploitation of coastal fishery resources, and (with the exception of Kadavu) few resorts. Lomaiviti, Kadavu and Lau send small quantities of fish to Suva, but estimating the amounts is difficult.
Central Division	The main feature of the Central Division with respect to the national fish trade is that the markets in Suva area serve as destinations for almost all the fish exported from the Northern and Eastern Divisions – with only a small amount from the Western Division, whose fishers enjoy credible markets in the hotels, restaurants and city and town such as Lautoka, Ba and Nadi. By far the largest source of fish sold in Suva is northern Vanua Levu. A significant amount of fish comes from teams of divers based in Nabukalou Creek, Bailey Bridge, and villages north of Korovou that make multiday trips to places as far away as Vatulele and Vanua Levu.
Major Suva area fish markets	The main fish markets in the greater Suva area are Nabukalou Creek, Baily Bridge, Laqere and Nausori, and many smaller sites. There is a complex web of fish marketing arrangements in Suva (e.g. markets, fish shops, roadside sales, restaurants), and almost no data is available from any of the components. The fish market is clueless as to where the fish sold in Suva are being sourced and the impacts the fishing activities are causing to the fisheries resources and their habitats.
Coastal fish exports	Data from the Fiji Customs and Revenue Service show that in 2016 and 2017, Fiji's exports of coastal fish amounted to 434 tonnes and 451 tonnes, respectively. Chilled fish are exported by air from Nadi, while frozen whole fish and fillets are exported mainly by sea from Suva.

3.4 Best practices and inspiring models

At the national level, the government has in recent times provided some best practices for coastal fisheries management to ensure the ecological sustainability of coastal fisheries resources. One of these initiatives include the amendment to Fiji's fisheries legislation to accommodate the seasonal bans for species of groupers and coral trout and a total ban on the harvest of highly threatened sea cucumber and sea turtles and an awareness campaign on coastal fisheries sustainability.

In 2018, the Minister of Fisheries through the Fisheries Regulations imposed a legal seasonal ban on the harvesting of a number of listed species of groupers and coral trout for the period June–September. The purpose of the seasonal bans is to enable the recovery of stocks via short term prohibitions on the capture of certain fish based on knowledge of the breeding patterns of the

species that are being managed. The grouper and coral trout seasonal ban was informed by extensive research, which revealed that the peak breeding season for these important food fish is the period from June–September when the species gather in large spawning aggregations that make them highly vulnerable to fishing. The seasonal ban on capture during these breeding months enable these fish species to breed and provide the best chance for more fish in the future. As a result of the seasonal ban on groupers and coral trout during their spawning season, there have been a marked improvements in the size and number of these species reportedly sold in fish markets in recent times.¹⁰⁵

The total ban on the harvesting of sea cucumber is also an inspiring undertaking given the boom and bust records over the years and the need to safeguard this important source of livelihood for coastal fishers. In addition, the Ministry of Fisheries and the Inshore Fisheries Management Division are looking at minimum fish sizes as these may be applied to provide vital reef fish with more time to grow and breed before they are caught.

Government, NGOs and other coastal fisheries stakeholders have been working together to address the decline in marine biodiversity as a result of overfishing over the years. One of the current initiatives that supports government in the minimum fish sizes programme is the Set Size campaign which focuses on improving the communication of conservation and ecological sustainability information. The Set Size campaign launched by the Ministry of Fisheries in 2017 is a cross-sector effort to reverse the decline of inshore fisheries by encouraging people to avoid the capture of undersized fish. The campaign is coordinated by communications NGO CChange and a broad coalition of partners to help fishers, fish sellers and consumers better understand the sizes fish need to reach to ensure they are breeding and restocking Fiji reefs, year after year. The campaign focuses on the current Set Sizes, or minimum sizes, under Fijis Law as additional research on size of maturity in Fiji is continuing. Part of the campaign program is gauging the general awareness of traders on the legal minimum sizes through surveys, and whether they are aware of the correct legal minimum sizes. One of the findings from this campaign was that while two-thirds of middlemen surveyed know that Fiji has legal minimum sizes, only 11% could name the legal size for a fish.¹⁰⁶

In addition, another earlier initiative by CChange was launched in 2014. The 4FJ (For Fiji) campaign was established with support from the Fiji Ministry of Fisheries to reduce fishing pressure on rapidly declining grouper fisheries in Fiji. The campaign recruited “champions” (sports figures, community leaders, church leaders) to pledge to not eat groupers during the spawning season (June – September each year).

The FLMMA approach, which promotes and encourages the preservation, protection and sustainable use of marine resources by the resource owners, works to achieve local objectives, integrates local knowledge and customs with contemporary management practices, and involves local resource users in developing strategies and actions to sustainably manage fisheries resources and biodiversity for the future.¹⁰⁷ These management strategies and actions may consist of permanent closures, rotational closures, gear restrictions, seasonal/species bans, sacred sites, catch size limits, and licensing controls.¹⁰⁸ Since 2009, over 10,000 km² of inshore marine waters have been incorporated into a network of LMMAs in Fiji, which has expanded rapidly from 1 site in 1997 to over 150 sites by 2009.¹⁰⁹ The Fiji LMMA (FLMMA) network has demonstrated that community managed areas can have a positive impact in maintaining and revitalising coastal fisheries populations that are critical for ecosystem health and functioning.¹¹⁰ To date, the LMMA work has covered all coastal provinces in Fiji (Figure 21).¹¹¹

105 Ministry of Fisheries. 2021. Ministry of Fisheries Annual Report 2018–2019. Parliamentary Paper 37/2021, Parliament of Fiji, Suva, Fiji

106 CChange. 2020. 4FJ Fish Smart rolls out private sector engagement. <https://4fjmovement.org/news-events/tag/Fiji+fisheries>

107 FLMMA (2010) 2010 Annual Report. Fiji Locally Managed Marine Area Network, Suva, Fiji.

108 Jupiter S, Mills M, Comley J, Batibasaga A, Jenkins A (2010) Fiji marine ecological gap assessment: interim progress report. Wildlife Conservation Society, Suva, Fiji 26 pp

109 Govan H, Tawake A, Tabunakawai K, Jenkins A, Lasgorceix A, Schwarz AM, Aalbersberg B, Manele B, Vieux C, Notere D, Afzal D, Techera E, Rasalato ET, Sykes H, Walton H, Tafea H, Korovulavula I, Comley J, Kinch J, Feehelly J, Petit J, Heaps L, Anderson P, Cohen P, Ifopo P, Vave R, Hills R, Tawakelevu S, Alefaio S, Meo S, Troniak S, Malimali S, Kukuian S, George S, Tauaefa T, Obed T (2009) Status and potential of locally managed marine areas in the South Pacific: meeting nature conservation and sustainable livelihood targets through widespread implementation of LMMAs. SPREP/WWF/WorldFish Reefbase/CRISP, Suva, Fiji 95 pp + 95 pp annexes

110 Mills M, Jupiter S, Adams V, Ban N, Pressey B. 2011. Can management actions within the Fiji Locally Managed Marine Area Network serve to meet Fiji's national goal to protect 30% of inshore marine areas by 2020? Wildlife Conservation Society and ARC Centre of Excellence for Coral Reef Studies, Suva, Fiji, 16 pp

111 Mills, M., Jupiter, S. D., Presley, R. L., Ban, N. C and Comley, J. 2011. Incorporating Effectiveness of Community-Based Management in a National Marine Gap Analysis for Fiji. Conservation Biology, pp. 1155–1164

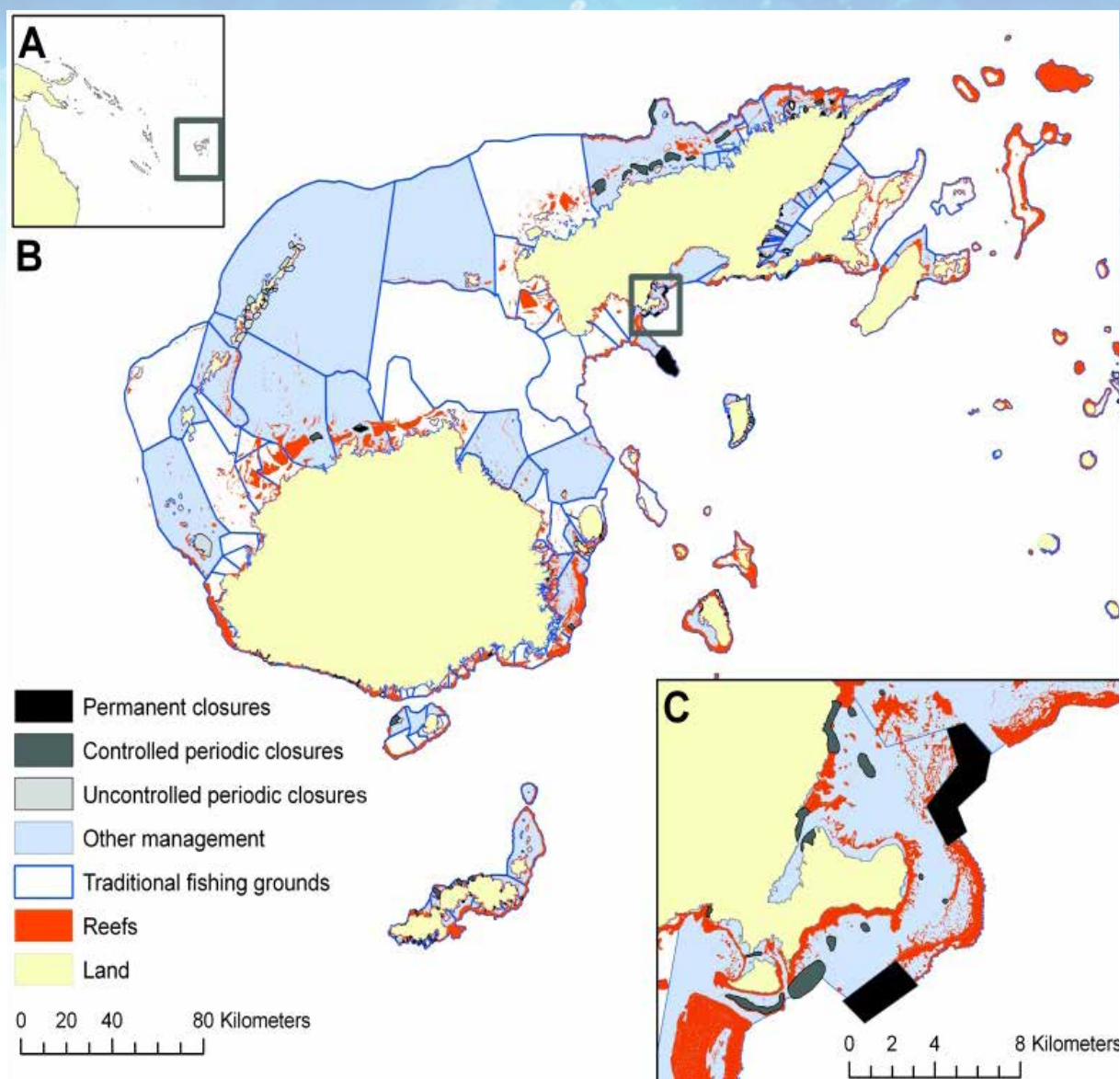


Figure 21 – Traditionally owned fishing grounds in Fiji (Source: Mills et. al. 2011)

The Vueti Navakavu LMMA, implemented by the people of Yavusa Navakavu (comprised of five villages – Muaivuso, Nabaka, Waiqanake, Namakala and Ucuinamono) is a best practice model for coastal fisheries management through the implementation of a community conservation marine area. Designated in 2002 to address the decline of fish populations observed by the communities in their traditional fishing ground (locally known as qoliqoli and covering an area of 19.1 km), this area was established to improve the management and protection of their marine area. Its aim is to conserve a healthy ecosystem that can support abundant and diverse marine life as a source of food and income. Following the creation of the Navakavu Development Trust with the task to oversee the LMMA and other development programs at community level and several consultations with the wider community, a system of coastal fisheries governance system was established to monitor activities and stop illegal fishing activities. To guide the sustainable development of the local people and associated natural resources, the initiative developed the Navakavu Revitalization Strategy 2018-2022 (NRS),¹¹² which is a development framework with the vision “to build a Resilient Navakavu – O Navakavu Qoi!”

¹¹² Navakavu Development Trust. 2017. Navakavu Revitalization Strategy 2018-2022. Navakavu, Suva, Fiji

Another good model is the Ecosystem-based Management (EBM) approach implemented by the Wildlife Conservation Society in Bua Province and other sites. These initiatives adopted an integrated approach that considers the entire ecosystem (e.g. land, rivers, lakes, coasts, wetlands, mangroves, seagrass beds, coral reefs, ocean), including humans.¹¹³ The overall aim of EBM is to maintain ecosystem health, services and resilience so that ecosystems can sustain human needs into the future.¹¹⁴ The EBM framework in these sites combines the most successful elements of the LMMA network with broad protected area design principles for biodiversity conservation that take advantage of both traditional and Western approaches to marine coastal fisheries management. Through a participatory planning process, communities identified key ecosystem features for protection into the future, categorised the main threats affecting these features, and developed locally appropriate management actions to mitigate them.¹¹⁵

The Lau Seascape initiative by Conservation International is also another model that has some best practices for coastal fisheries management. The program aims to empower and enable local communities to effectively co-manage, along with the national and provincial governments, Lau's rich marine resources to ensure long-term food security, biodiversity conservation and community well-being. Driven by their goals and ambitions for their islands, the Provincial Chiefs of Lau, as representatives of their island communities, formally endorsed the initiative in 2016. Building upon these commitments, the Lau Seascape is now a multi-partner initiative composed of government representatives, traditional leaders, private sector and NGO stakeholders, grounded in a joint Memorandum of Understanding among all partners. The Lau Seascape Strategy was launched in November 2019 and envisions "sustainable regenerative resources [management] by 2030 grounded in values of respect and collaborative participation."¹¹⁶ One of the main outcome of the Lau Seascape is the adoption of the Lau Resource Declaration, a document that in essence, carves out the conservation and protection of the province's marine resources. An important component of the declaration that is worth highlighting is the blanket ban on night spear fishing in the Province, a rarity voluntary commitment at community level and a first for any province in Fiji.¹¹⁷

Partnerships between tourism businesses and local communities have also led to marine protection on the Great Sea Reef. For example, several hotels in the Mamanuca Islands and Yasawa Islands are actively protecting marine areas and key species. For instance, around Tokoriki Island there is a giant clam (*Tridacna gigas*) nursery maintained by Tokoriki Diving at the Tokoriki Island Resort. Here, this historically overharvested species is grown to maturity in cages on the reef to protect them from predators before they are placed back onto the reef in an area protected from harvesting (Tokoriki Diving 2020). Many tourism operators along the Mamanuca Islands and Yasawa Islands have forged marine conservation agreements with local communities. For instance, since 1988 Navini Island Resort leased Navini Island and a Conservation Agreement was established by the resort and the landowners, whereby a no-take tabu area was established around the island reef system for snorkelling. In exchange, a yearly payment is paid to landowners for community development benefits.¹¹⁸ Another example is the Botaira Resort in the Yasawa Islands that has a no-take tabu area (approximately 53 ha) which is used for scuba diving and snorkelling. This was negotiated with local communities on the basis of employing local villagers in the resort.¹¹⁹ Also in the Yasawas Group, several marine conservation agreements have been set up to protect areas between Drawaqa and Naviti Islands where manta rays (*Mobula alfredi*), spinner dolphins (*Stenella longirostris*), and sharks are commonly found. Here, tourists visiting to snorkel with manta rays pay a fee that goes to indigenous fishing rights holders.

113 Clarke P. and Jupiter S. 2010. Principles and practice of ecosystem-based management: A guide for conservation practitioners in the tropical Western Pacific. Suva, Fiji: Wildlife Conservation Society. 43 p.

114 Agardy T., Davis J., Sherwood K. and Vestergaard O. 2011. Taking steps toward marine and coastal ecosystem-based management: An introductory guide. United Nations Environment Programme Regional Seas Reports and Studies 189:68.

115 Wildlife Conservation Society, Fiji Country Program, 11 Ma'afu Street, Suva, Fiji

116 Conservation International. 2018. Lau Seascape Strategy: 2018–2030. Conservation International, Suva, Fiji. 58 pp.

117 Bolaitamana, M. 2021. Lau province ban night spear fishing, a first for Fiji. Fiji Sun Online <https://fijisun.com.fj/2021/06/10/lau-province-ban-night-spear-fishing-a-first-for-fiji/>

118 Niesten, E., Gjertsen, H and Fong, P. S. 2013. Incentives for marine conservation: options for small island developing states. Environment and Development Economics, 18(4), 440–458. <https://www.jstor.org/stable/26379160>

119 Mangubhai, S., Sykes, H., Manley, M., Vukikomoala, K., and M. Beattie (2020). Contributions of tourism-based Marine Conservation Agreements to natural resource management in Fiji. Ecological Economics 171:106607

It is important to acknowledge and reflect that many individuals working for NGOs, academic institutions, government departments and the private sector, especially tourism operators have been part of and collaborated on all the initiatives that have been briefly outlined above. The level of collaboration and effort required demonstrates the inter-disciplinary nature of oceans governance and that fisheries management is complex and dynamic process that requires collaboration and support from many people and institutions. Ultimately, the enforcement of all fisheries management initiatives rests with the State and this means its implementing agency, the Ministry of Fisheries. It is also important to consult and win public support for fisheries initiatives and ensure they are suited to the local context as this will make implementation more successful and less of a drain on Fiji's resources.

3.5 Strengthen the transformative role of the national framework towards a sustainable coastal fisheries sector

i. Aspects of the framework in favour of environment and sustainable development

Fiji has several relevant policy documents and strategies that support sustainable development through the preservation of the marine biodiversity since the country is a signatory to a number of international and regional environmental conventions. The Fisheries Act 1942 and Marine Spaces Act 1978, have been the main instruments governing the sector. Relevant policies include the Fisheries Strategic Development Plan 2019-2029, Green Growth Framework, 20-Year National Development Plan (NDP) 2017-2036, National Environment Strategy (NES), State of Environment Report, Natural Resource Inventory, National Biodiversity Strategy and Action Plan (NBSAP), Integrated Coastal Management (ICM) Framework, National Ocean Policy (NOP) and the National Adaptation Plan (NAP).

The Strategic Development Plan (SDP) for Fisheries (2019 – 2029) produced by the Ministry of Fisheries outlines key development strategies and priority areas with a focus on strengthening resilience while ensuring positive ecological, economic and social and cultural wellbeing for the long-term benefit of Fiji's population. With a vision "To have the best Fisheries in the Pacific Region", the SDP aims to incorporate the use of MPAs to ensure that our coastal communities can derive sustainable income from marine aquaculture initiatives and access to fish aggregating devices. For the period 2019 -2022, the SDP focuses on six strategic priorities including:

- Develop a fit for purpose legislations
- Develop a robust licensing system
- Develop joint venture initiatives with the private sector
- Develop species management plan
- Have 30% Fijian waters as Marine Managed Areas
- Increase coastal fishery programmes and collaborations with NGOs

The National Oceans Policy provides a holistic framework for integrated action and partnerships on all of Fiji's national, regional and global ocean-related commitments. It recognises and aligns itself to ongoing approaches in various ocean management sectors, and provides overarching support and integration across these sectors. The NOP frames a progression to the integrated management of Fiji's entire ocean (the Area Within National Jurisdiction, AWNJ) by 2030, to ensure the resilience and sustainability of marine ecosystems while maximising opportunities for socio-economic benefits.

Section 3.2.13 of the National Development Plan (NDP) is focussed on sustainable development of the coastal fisheries sub-sector with a specific goal that reads, “Support inshore/coastal fisheries through sustainable fisheries management and development” and strategies that include the following:

- Establish a Coastal Fisheries Management Division responsible for the monitoring, control and surveillance of coastal fisheries.
- Upgrade existing database to capture data on the status of inshore/coastal marine resources including regeneration and harvesting levels.
- Conduct resource assessment survey to manage inshore fisheries.
- Develop an appropriate valuation framework for inshore fisheries.
- Review the procedures and streamline processes to obtaining assistance such as obtaining a fishing permit.
- Finalise the review of fees and charges.
- Undertake resource assessments and commodity profiling to establish the status of fish stocks.
- Finalise the review of the Inshore Fisheries Management Decree
- Formalise supportive inshore policy and regulations.
- Complete a recreational fisheries policy to support activities such as game fishing.
- Promote sustainable fisheries management and the replenishment of fish stocks through management tools such as the establishment of MPAs, seasonal closures, size limits and quotas, and gear restrictions.
- Mainstream collaboration with development partners to empower community-based, integrated sustainable resource management and development initiatives through ongoing fisheries programmes.
- Support the revitalisation and conservation of mangroves and corals.
- Conduct training and equip fish wardens for effective monitoring and enforcement.
- Support the strategic placement and maximise the use of infrastructure such as Rural Fisheries Service Centres (RFSC), ice plants and cold storage especially in the maritime islands. This would be complemented by appropriate training

The National Biodiversity Strategy and Action Plan (2020 – 2025) is also a key planning document that seeks to coordinate inter-agency cooperation in the management of Fiji’s biodiversity. The sustainable development focal area is the widest coverage of the NBSAP in terms of implementation as this is where a lot of the direct threats to biodiversity are addressed, such as unsustainable coastal development, forest conversion, addressing threats to inland waters and inshore fisheries. Aspects of the framework preventing the transition towards sustainable and responsible practices and possible measures to alleviate them.

The National Integrated Coastal Management (ICM) Framework (2011) was developed by the Department of Environment to guide the development of Integrated Coastal Management Plans at the provincial level. A national ICM committee was formally established in September 2009 to coordinate implementation of the Framework.¹²⁰ Ra province was the first province in Fiji to develop and endorse a plan - *The Ra Integrated Coastal Management Plan (2015-2020)*. The eight priority issues targeted by the Ra ICM Plan include river gravel extraction of rivers, burning, poaching, destructive methods of fishing (focus on freshwater systems), community wastewater management, unsustainable farming practices, diving fee contributions from tourism (Vatu-i-Ra) and black sand mining in Saivou district. Based on the Ra experience, Kadavu province developed and endorsed a similar plan in 2017. The key priority areas covered by the Kadavu ICM Plan (2017 – 2022) include village governance, local food production and consumption, water catchment, deforestation, land and sea transportation, infrastructure, unplanned development, financial literacy, youth Issues and development, energy security, business licensing and operations, waste management, climate change and natural disasters, poaching and burning.¹²¹ It is the intention that all provinces in Fiji develop ICM plans.

120 Department of Environment. 2011. Integrated Coastal Management Framework of the Republic of Fiji 2011. Opportunities and issues for managing our coastal resources sustainably. Government of Fiji.

121 <https://resccue.spc.int/fiji/activity/integrated-coastal-management-plans>

Lastly, the Fiji Environmental Management Act (EMA) sets out the laws relating to the protection of natural resources, provides the framework for national coordination and planning in relation to environmental matters, including the marine environment and grants broad new powers to government agencies to control environmentally harmful activities. Section 8(3) of the EMA calls for the establishment of an Integrated Coastal Management (ICM) plan for Fiji. An ICM Framework (2011) was developed to help guide actions and policy relating to sustainable coastal resource management. The framework promotes a multi-sectoral approach to safeguard Fiji's coastal environment from threats caused by increasing development, and acknowledges the ICM Committee is a lead agency to oversee the development of the national ICM plan.¹²² The 2011 Fiji ICM Framework outlines the scope and structure of what the national ICM plan should cover. The Framework is guided by the vision for coastal zones to: maintain ecological services and processes; preserve, enhance and rehabilitate natural resources; and improve health and well-being of the people of Fiji.

ii. Aspects of the Framework preventing the transition towards sustainable and responsible practices and possible measures to alleviate them

While the existing Fisheries Act and associated policy framework policies provide a number of actions that relate to the protection of biodiversity through the conservation of marine habitat, the actions are inadequate to support the conservation, management, and sustainable use of inshore coastal and marine resources. Much of the current policies, in particular the Fisheries Act, are approached from a governmental perspective towards maximizing commercial production without recognising of the need to address and solve conservation and broader environmental problems associated with coastal marine fisheries resources.

For instance, the Fisheries Act provides for almost all fishing related activities in Fiji. It proposes catch limitations, gear restrictions, closures, export limitations, customary fishing rights and penalties for breaching the laws. While there are restrictions on fish and invertebrate catches, sizes, species, areas, fishing methods and seasons, the same law provides for exemptions that may be granted upon request.

In addition, the Fisheries Act outlines laws and regulations regarding restrictions on fish catches, species, sizes and area closures, which may be applied to set up Marine Managed Areas (MMA). However, the Fisheries Regulations state that fishing is prohibited 'except by hand net, wading net, spear or line and hook'. Hence, the Minister can allow for the establishment of an MMA, however, under the current Fisheries Regulations it is not possible to have an effective MMA. In addition, the government lacks the resources to police and enforce compliance with coastal fisheries MMAs. Therefore the involvement of local communities within a customary fishing area is critical.¹²³

¹²² WCS. 2016. Kilaka Forest Conservation Area Management Plan. Wildlife Conservation Society, Suva, Fiji. 34 pp

¹²³ Techera, E., & Troniak, S. 2009. Marine Protected Areas Policy and Legislation Gap Analysis: Fiji Islands. International Union for the Conservation of Nature and Natural Resources.

4 Recommendations: Scenarios of Commitments

4.1 Kava industry

This study concludes that interventions are urgently needed to mitigate the impact of the booming kava industry on Fiji's forest-based biodiversity. Towards this end, the BIODDEV2030 initiative seeks to encourage actors involved in the industry to recognise the problem and to voluntarily commit to taking specific and targeted strategic actions to address the ecological sustainability of the industry. The overarching problem that requires addressing can be stated as follows:

A rapidly growing kava sector is increasing the rate of forest loss, forest fragmentation and reduction in forest quality, thereby reducing the habitat available for threatened native and endemic species.

The specific problem is that at current and projected future farming intensities, the conventional forest-based kava farming system using shifting cultivation is incompatible with forest and biodiversity conservation objectives.

It follows that voluntary commitments¹²⁴ and strategic actions should to be framed by the need to i) make technical changes to the forest-based farming system that are aimed at reducing its environmental impact; and/or ii) developing alternative viable farming systems that would allow for kava to be produced at similar levels of efficiency outside of forests.

In this regard, this sector review recommends 19 strategic actions (scenarios) that can be used to guide the development of voluntary commitments by both industry players and regulatory and support agencies ('Enablers'). A multi-pronged approach is recommended, with strategic actions across a number of thematic areas including: awareness, research, land tenure, financing, policy, agricultural extension, pilot projects and land-use planning. The strategic actions are presented in tabular form below. Each strategic action is followed by examples of possible voluntary commitment(s) relevant to the strategic action. It is the intention that the 19 recommended strategic actions and proposals for voluntary commitments be used to frame the 'national dialogue' phase of the BIODDEV2030 project in Fiji. The example voluntary commitments do not contain specific time frames as these will need to be elaborated in consultation with stakeholders during the national dialogue phase. The final voluntary commitments will need to:

- Be formalised in writing
- Be made public
- Contain quantitative elements
- Contain time frames (intermediate dates, final dates for the achievement of goals)
- Designate the players and resources planned to implement actions and reach the targets
- Include SMART indicators and objectives which are specific, measurable, achievable, relevant, time-bound
- Be accompanied by a robust monitoring and assessment system managed on a national scale.¹²⁵

124 A voluntary commitment (VC) is defined within the framework of BIODDEV2030 as "an agreement whereby one or several stakeholders undertake in order to mobilise and set up a series of prospective and strategic actions, which are shared and science based and which will bring about a positive and measurable change in biodiversity health."

125 Sourced from the BIODDEV2030 document entitled: Common landmarks for high-quality voluntary commitments. Internal document. 23/11/2021

Proposed Voluntary Commitment Focus: Advocacy and Awareness

Problem addressed: There is insufficient awareness among industry players and enablers about the ecological impact of kava production on native forest ecosystems and associated biodiversity and the threats that this poses to the industry in terms of constraining growth and potentially damaging its reputation. In-addition awareness is lacking about alternative forest-friendly farming methods. Awareness of these issues is a pre-requisite for industry players and enablers to take action.

Strategic Action 1: Fund, design and implement evidence-based advocacy campaigns targeting the Kava sector

Lead and support agencies	Target Audience	Time Horizon	Supporting Actions
<ul style="list-style-type: none"> Ministry of Environment through the NBSAP Forest Conservation and Species Conservation working groups in partnership with IUCN, conservation NGOs and development partners Kava industry through the National Kava Coordinating Committee with support from the Ministry of Environment, Agriculture, NGOs and partners 	<ul style="list-style-type: none"> Large private sector companies that are heavily invested Industry Enablers 	Short/medium term	<ul style="list-style-type: none"> Include conservation sector representatives on Kava industry governance structures Provide conservation inputs to the review of the Kava Bill Encourage industry players to include awareness campaigns as part of their corporate social responsibility programmes

EXAMPLE VOLUNTARY COMMITMENTS

The Kava industry through the National Kava Coordinating Committee commits to raise awareness through its platforms to promote sustainable agriculture practises for biodiversity conservation.

The Ministry of Environment commits to conducting an awareness campaign targeted at key kava industry players and enablers, including Parliament, on the threats posed to forests and biodiversity by the growing kava industry, and to address the issue through the NBSAP Implementation Framework currently being developed.

Proposed Voluntary Commitment Focus: Advocacy and Awareness

Problem addressed: There is insufficient awareness among forest owning land units on how the clearing of upland forests impacts on ecosystem services and biodiversity that sustains their well-being and health. There is also insufficient knowledge of alternative kava farming systems that minimise disturbances to forest ecosystems, ecosystem services and forest-based biodiversity. Awareness of the problem and knowledge of the solutions will empower forest land owning units to engage with kava farmers and become more pro-active in managing kava farming in their forests.

Strategic Action 2: Train and equip extension officers from lead and support agencies to ensure effective and consistent messaging

Strategic Action 3: Incorporate biodiversity awareness programs into Kava industry, Provincial Office, District and Village plans

Lead and support agencies	Target Audience	Time Horizon	Supporting Actions
<ul style="list-style-type: none"> Ministry of Environment in partnership with Ministry of Agriculture (SLM Unit and Extension), Provincial Councils (Conservation officers), iTaukei Land Trust Board, Ministry of Forestry and Fiji Crops and Livestock Council Large kava retail companies such as Fiji Kava, Green Gold and Fiji Kava have shown interest to support messaging to the farmers that supply them Yaubula Management Support Teams and Village Environment Committees Fiji Crop and Livestock Council National Kava Coordinating Committee 	<ul style="list-style-type: none"> Land-owning units (Mataqalis, Yavusas), particularly those whose land overlaps with Key Biodiversity Areas. Land-owning units include farmers and non-farmers. Middlemen and agents 	<ul style="list-style-type: none"> Short/medium 	<ul style="list-style-type: none"> Develop resource materials that include costings on adapted and alternative farming systems and potential additional sources of income (e.g. REDD+, conservation leases) Introduce a system of national recognition and benefit for landowners that commit to relocating kava farms and conserving forests

EXAMPLE VOLUNTARY COMMITMENTS

Land Owners of forests in Key Biodiversity Areas commit to moving kava production out of High Conservation Value forests and to reforest previously cleared forest patches.

Island, Province or Village based communities of Kava farmers commit to farming organically.

Large private sector companies and industry players commit to incorporate biodiversity awareness programs into their workplans, as part of their corporate social responsibility.

Village Environment Committees and Provincial Councils commit to mainstream biodiversity awareness into their plans. The Ministry of Environment, in collaboration with the Ministry of Agriculture, Conservation NGOs and development partners, commits to developing and promoting a 'Low Grow' campaign and to develop accompanying training resources and to train extension officers from relevant natural resource management agencies.

The Ministry of Agriculture commits to adding sessions on biodiversity conservation and best practices for kava farming to existing multi-topic Quality Kava Trainings held for Kava farmers under the Yaqona Farming Programme and to seek pledges from land-owning units to adapt their farming practices and/or relocate kava farms outside of forests.

Proposed Voluntary Commitment Focus: Research

Problem addressed: There is currently insufficient spatial data available on the extent and rate of conversion of forests to kava farms in Fiji. There is also little research on the biological impact of kava plantations on forest ecology and associated environmental services and biodiversity. This data is urgently needed to assist in quantifying the problem, to inform advocacy campaigns, to fine-tune intervention strategies, to set realistic targets and to monitor progress in achieving targets.

Strategic Action 4: Establish a multi-agency technical working group of GIS specialists under the auspices of the National Kava Coordinating Committee and develop a monitoring system using remote satellite sensing of forest cover

Lead and support agencies	Information needed by	Time Horizon	Supporting Actions
<ul style="list-style-type: none"> National Kava Coordinating Committee and Ministry of Forestry Technical Working Group to include GIS specialists from Forestry, Agriculture, Environment, Lands, TLTB, IUCN and conservation organisations 	<ul style="list-style-type: none"> Policy makers and regulatory authorities National (e.g. NBSAP) and Agency planning documents Kava industry players Fiji Crop and Livestock Council 	<ul style="list-style-type: none"> Short/medium term 	<ul style="list-style-type: none"> National Forest Inventory Ground truthing by Agriculture Extension Services and Conservation Officers Expand Agricultural Census methodology to include spatial mapping of farms

Strategic Action 5: Establish dedicated research programmes in collaboration with academic institutions, conservation organisations, regional organisations and development partners

<ul style="list-style-type: none"> National Kava Coordinating Committee and Ministry of Environment 	<ul style="list-style-type: none"> Policy makers and regulatory authorities National (e.g. NBSAP) and Agency planning documents Kava industry players Fiji Crop and Livestock Council 	<ul style="list-style-type: none"> Medium term 	<ul style="list-style-type: none"> Donor funded projects and programmes
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EXAMPLE VOLUNTARY COMMITMENTS

The National Kava Coordinating Committee, under the chairmanship of the Ministry of Agriculture, and in partnership with the Ministry of Forestry, commits to establish a multi-agency technical working group with the brief to spatially assess and quantify the impact of kava production on native forests in priority Key Biodiversity Areas (Taveuni Highlands, Gau Highlands, Natewa/Tunuloa Peninsula, Ovalau Highlands, East Kadavu, Nabukelevu (Kadavu)) and to design a spatial monitoring system using a combination of remote sensing, drone technology and ground truthing.

Proposed Voluntary Commitment Focus: Research

Problem addressed: Economically and socially feasible models of adapted and alternative farming systems that incorporate biodiversity conservation considerations are urgently needed to address the ecological impact of kava farming on Fiji's native forests and biodiversity.

Strategic Action 6: Increase levels of agronomic research on ecologically sustainable alternative kava farming systems and extend current trials and demonstrations in Taveuni to other hotspot provinces and islands

Lead and support agencies	Information needed by	Time Horizon	Supporting Actions
<ul style="list-style-type: none"> Ministry of Agriculture Research Division with support from FAO Other relevant organisations that could support this work include: <p>SPC LRD, SPREP, Conservation organisations, Agricultural training colleges, FNU, USP, Farmer networks; e.g. PIFAN, Ministry of Forestry under the REDD+ programme, PHAMA Plus, Development partners and large kava industry players</p>	<ul style="list-style-type: none"> Kava farmers Landowners Companies with outgrower schemes 	<ul style="list-style-type: none"> Short/medium term 	<ul style="list-style-type: none"> Pilot sustainable traditional farming models

EXAMPLE VOLUNTARY COMMITMENTS

The Ministry of Agriculture commits to increasing resources for applied research on more ecologically sustainable kava farming systems and to upscaling and expanding current field trials and demonstrations in Taveuni to the other biodiversity/kava hotspot areas Gau, Ovalau, Kadavu and Natewa Peninsula.

Large kava companies commit to investing in applied research and field trials on ecologically sustainable kava farming systems.

Proposed Voluntary Commitment Focus: Research

Problem addressed: The local and international market demand for biodiversity-friendly kava certification is currently unknown. There is also little understanding at present on what environmental standards would need to be developed to inform a certification system tailored to Fiji's context.

Strategic Action 7: Conduct a market-based feasibility study for 'eco-friendly' kava certification

Lead and support agencies	Information needed by	Time Horizon	Supporting Actions
<ul style="list-style-type: none"> National Kava Coordinating Committee and Ministry of Commerce, Trade, Tourism and Transport Potential service providers include: SPC LRD, POETCom, PHAMA Plus, SPREP, Conservation NGOs and academic research institutions 	<ul style="list-style-type: none"> Kava farmers Large private sector companies that are heavily invested * Overseas-based importers (pharmaceutical and nutraceutical companies; Kava bars; etc.) 	<ul style="list-style-type: none"> Medium term 	<ul style="list-style-type: none"> Establishment of a national industry certification oversight body Investigate the inclusion of iconic at-risk species in messaging and branding (e.g. Fiji Petrel; Lau banded Iguana; Fiji Ground frog, Natewa Silk Tail) Explore applicability of existing international certification schemes; e.g. Fairtrade, Rainforest Alliance Sustainable Agriculture Standard; NBS Standard

EXAMPLE VOLUNTARY COMMITMENT

The National Kava Coordinating Committee, under the chairmanship of Ministry of Agriculture, and with input from all members, commits to commissioning a market feasibility study on developing a forest/biodiversity-friendly certification system for kava as a possible strategy to reduce the industry's impact on biodiversity and to improve the image and sustainability of the industry.

* Lami Kava, a private company that produces kava for both the domestic and export markets, is interested to explore 'green certification' and would benefit from technical guidance from Enablers.

Proposed Voluntary Commitment Focus: Pilot projects

Problem addressed: There is a lack of sustainable traditional model farming for Kava in Fiji which farmers can adopt as 'best practice'.

Strategic Action 8: Implement traditional sustainable farming models for kava farming

Lead Actors	Support Agencies	Target	Time Horizon	Supporting Actions
<ul style="list-style-type: none"> Provincial Yaubula Management Support Teams (YMST) and Village Environmental Committees Fiji Crop and Livestock Council 	<ul style="list-style-type: none"> Ministry of Agriculture Ministry of iTaukei Affairs (Conservation officers) iTaukei Land Trust Board NGOs 	<ul style="list-style-type: none"> Kava farmers 	<ul style="list-style-type: none"> Short/medium 	<ul style="list-style-type: none"> Ministry of Agriculture provides technical knowledge regarding traditional sustainable agriculture practices (link with Strategic Action 6) Ministries/NGO projects support the community action financially or in-kind through their workplans or strategic plans.

EXAMPLE VOLUNTARY COMMITMENTS

The Provincial Yaubula Management Support Teams, Village Environmental committees, Fiji Crop and Livestock Council (Kava associations) commit to adopt, advocate and practice sustainable traditional farming to kava farmers.

Gau Islanders commit to working with sustainable traditional farming trials promoted by the Ministry of Agriculture.

* Gau Island (Sawaieke village) Kava farmers and communities are practising sustainable traditional kava farming. They are now farming at low elevation using the practise of organic fertilisers, inter-cropping, planting nitrogen fixing trees such as *Calliandra* (*Calliandra calothyrsus* Meisn), *Leucaena* (*Leucaena leucocephala*) and Macuna beans (*Mucuna pruriens*) for soil fertility.

Proposed Voluntary Commitment Focus: Training

Problem addressed: Kava farmers do not currently advocate or share information among themselves about ecologically sustainable farming methods.

Strategic Action 9: Design and implement train-the-trainer programs for ecologically sustainable kava farming

Lead Actors	Support Agencies	Target	Time Horizon	Supporting Actions
<ul style="list-style-type: none"> Provincial Yaubula Management Support Teams (YMST) and Village Environmental Committees Fiji Crop and Livestock Council Tutu Training Centre PIFON 	<ul style="list-style-type: none"> Ministry of Agriculture Ministry of iTaukei Affairs (Conservation officers) NGOs 	<ul style="list-style-type: none"> Kava farmers 	<ul style="list-style-type: none"> Short/medium 	<ul style="list-style-type: none"> Ministry of Agriculture provides training programs and materials Direct and in-kind financial support to communities by government ministries and NGOs

EXAMPLE VOLUNTARY COMMITMENTS

Farmers commit to participate in a train-the-trainer training programme and to advocate for sustainable farming practices.

Provincial Yaubula Management Support Teams, Village Environmental committees, Fiji Crop and Livestock Council (Kava associations) commit to implementing train-the-trainer programs for sustainable kava farming.

Proposed Voluntary Commitment Focus: Land Tenure

Problem addressed: While only a small proportion of Kava farms operate on formal land leases, the majority of those that do are granted an Agricultural lease - Sub-category 'Planting Lease'. At present this sub-category of lease is not considered commercial in nature even though most of the farmers applying for it do farm Kava commercially. Because the sub-lease category is not considered commercial, applications do not require environmental screening, the submission of an Environmental Management Plan, or a Farm Management Plan. Larger commercial kava farms do not currently undergo EIAs although they may be subject to EIAs under development activities listed under Schedule 2 of the Environmental Management Act.

Strategic Action 10: Implement environmental screening for agricultural lease applications for the sub-category 'Planting Lease'

Lead and support agencies	Target Audience	Time Horizon	Supporting Actions
<ul style="list-style-type: none"> iTaukei Land Trust Board in partnership with the Ministry of Environment 	<ul style="list-style-type: none"> Members of the Mataqali or Yavusa land-owning units that wish to formalise their farm holdings Non-mataqali farmers wishing to farm on Mataqali communal land 	<ul style="list-style-type: none"> Medium term 	<ul style="list-style-type: none"> Prepare a joint submission to the TLTB Board Review conditions attached to Agricultural Leases and strengthen systems to monitor compliance

EXAMPLE VOLUNTARY COMMITMENTS

iTaukei Land Trust Board commits to strengthening the monitoring of lease conditions relating to forest conservation and applying environmental screening procedures to agricultural leases with respect to applications for kava (and ginger) farming under the sub-category 'Planting lease' beginning 2023.

Land owners/Mataqali commit to set conditions for the utilisation of their land for agriculture purposes and to monitor compliance.

Strategic Action 11: Investigate applicability of EMA Schedule 2 listed activities to large kava farm commercial developments and apply EIA regulations if applicable

Lead and support agencies	Target Audience	Time Horizon	Supporting Actions
<ul style="list-style-type: none"> Ministry of Environment in partnership with Ministry of Agriculture and TLTB 	<ul style="list-style-type: none"> Developers applying to establish new large commercial kava farms 	<ul style="list-style-type: none"> Short/medium 	<ul style="list-style-type: none"> Obtain legal opinion on the applicability of listed activity C) relating to 'degradation of land important to agriculture' Investigate inclusion of Key Biodiversity Areas as priority areas for application of EIA regulations

EXAMPLE VOLUNTARY COMMITMENT

The Ministry of Environment commits to strengthen application of EIA screening procedures for the establishment of large kava farms in native forest areas under listed activities described in Schedule 2 Part (1) of Environment Management Act (2005), particularly with reference to listed activities c), l), m), n) and o) in relation to Key Biodiversity Areas.

Proposed Voluntary Commitment Focus: Financing for commercial kava production

Problem addressed:

- (a) Processes for the screening of agricultural loan applications to the Fiji Development Bank do not include screening for forest and biodiversity loss.
- (b) Sustainability conditions attached to Fiji Development Bank loans for root crops are not adequately monitored or enforced.

Strategic Action 12: Strengthen processes for environmental screening of agricultural loan applications to the Fiji Development Bank for kava farming

Strategic Action 13: Strengthen the monitoring and enforcement of loan conditions relating to land-husbandry

Lead and support agencies	Information needed by	Time Horizon	Supporting Actions
<ul style="list-style-type: none"> Fiji Development Bank in partnership with Ministry of Environment, Ministry of Agriculture Land Resource Planning Unit and Ministry of Forestry 	<ul style="list-style-type: none"> Farmers wanting to take agricultural loans for purposes of kava (or ginger) farming 	<ul style="list-style-type: none"> Medium term 	<ul style="list-style-type: none"> Initiative underway by FDB under Green Climate Fund accreditation to strengthen Environmental and Social Safeguards linked to loan applications

EXAMPLE VOLUNTARY COMMITMENTS

The Fiji Development Bank commits to strengthening processes for environmental screening of agricultural loan applications for kava farming in forest areas.

The Fiji Development Bank commits to monitor conditions set for sustainable agriculture practises and have penalties in place for non-compliance.

Proposed Voluntary Commitment Focus: Policy and Legislation

Problems addressed: Governance and protection of Fiji's Kava Industry is dependent on the enactment of the Kava Bill that was introduced in 2016 but which has not yet been converted into an Act. The Bill in its current form does not address the issue of ecological sustainability with respect to forest and biodiversity conservation linked to Kava farming and the possible resulting reputational damage for the industry.

The Environment Management Act 2005 needs to strengthen EIA in agriculture farming and to incorporate biodiversity offsets in kava farming to ensure biodiversity and ecological processes are sustained.

Many of the Key Biodiversity Areas in Fiji are not legally protected making it difficult to prevent encroachment by Kava farmers.

Strategic Action 14: Finalise review of the Kava Bill and fast-track its enactment

Strategic Action 15: Strengthen EMA 2005 for EIA in Agriculture

Strategic Action 16: Enable and support "other effective area-based conservation measures (OECM)" on sites for positive and sustained long term conservation of biodiversity.

Lead and support agencies	Information needed by	Time Horizon	Supporting Actions
<ul style="list-style-type: none"> Ministry of Agriculture Policy Unit in collaboration with Solicitor General's Office and Parliament Provincial office through the Yaubula Management Support Team (YMST) with support from the Ministry of Environment (Protected Area Committee), Ministry of Forestry and relevant NGOs 	<ul style="list-style-type: none"> All stakeholders invested in the Kava industry National interest (protection of local industry and conservation of endemic biodiversity) Land owners, Mataqali owners 	<ul style="list-style-type: none"> Short/medium term Medium term 	<ul style="list-style-type: none"> Bill requires input from agencies involved in biodiversity conservation Ensures area not protected can be conserved through OECM

EXAMPLE VOLUNTARY COMMITMENTS

The Ministry of Agriculture undertakes to introduce ecological sustainability considerations into the review of the Kava Bill and to consult the Ministry of Environment and Conservation NGOs for their inputs.

The Ministry of Agriculture commits to include environmental organisations in national Kava governance structures and to ensure discussions are balanced and include environment protection.

The Solicitor General's Office undertakes to fast track the finalisation and presentation to parliament of the Kava Bill for enactment.

Landowners/Mataqali owners commit to protect their biodiversity using village by-laws and OECMs
Kava farmers commit to undertake EIA and biodiversity offsets for 'Net Gain' on biodiversity on the ground.

Proposed Voluntary Commitment Focus: Incentives

Problem addressed: There are currently few incentives to encourage kava farmers and land owners to adopt farming practices that are less damaging to forests. Material support to farmers currently offered under the Kava Development and Rural Millionaires programmes are not linked to changes in farming practices and financial actors that provide loans to farmers do not provide incentives to encourage Kava farmers to undertake sustainable agriculture practices.

Strategic Action 17: Use existing kava farming incentive programmes as a means to leverage commitments from farmers and land owners

Strategy Action 18: Use the REDD+ initiative under the emission reduction program to incentivise farmers, restore forest and farm on low land using sustainable agriculture practices

Lead and support agencies	Target audience	Time Horizon	Supporting Actions
<ul style="list-style-type: none"> Ministry of Agriculture Extension Services 	<ul style="list-style-type: none"> Kava farmers and land owning units (Mataqali and Yavusa) 	<ul style="list-style-type: none"> Short/medium term 	<ul style="list-style-type: none"> Current support to Yaqona farmers in the form of free planting materials, nurseries and drying sheds could be used as leverage to get farmers to attend relevant trainings and pledge to improving farming practices
<ul style="list-style-type: none"> Yaubula Management Support Team (YMST), in close collaboration with the Ministry of Forestry under the REDD+ program. 	<ul style="list-style-type: none"> Kava farmers / commercial farmers intending to cut forests for farming 	<ul style="list-style-type: none"> medium/long term 	<ul style="list-style-type: none"> REDD+ project under the Ministry of Forestry
<ul style="list-style-type: none"> Financial Actors with support from Ministry of Environment and Ministry of Agriculture 	<ul style="list-style-type: none"> Kava farmers 	<ul style="list-style-type: none"> medium/long term 	<ul style="list-style-type: none"> Incorporate in the National Biodiversity Strategy Action Plan (NBSAP)

EXAMPLE VOLUNTARY COMMITMENTS

The Ministry of Agriculture undertakes to require aspiring kava farmers (including youth) to undergo training on Sustainable Land Management including training in adapted and alternative forest and biodiversity-friendly kava farming systems and seek written assurances (VCs, MoUs, pledges) from them that they will implement these systems, before granting incentives under the Kava Development and Rural Millionaires programmes

Financial Actors commit to providing incentives to farmers to encourage them to farm sustainably for biodiversity conservation.

Kava farmers commit to be part of the REDD+ program.

Proposed Voluntary Commitment Focus: Landuse Planning

Problem addressed: There is insufficient recognition of Key Biodiversity Areas in spatial planning and approval processes used in agricultural landuse planning.

Strategic Action 19: Strengthen recognition of Key Biodiversity Areas in agricultural land use planning, including processes for lease and loan applications

Lead and support agencies	Target audience	Time Horizon	Supporting Actions
<ul style="list-style-type: none"> Ministry of Agriculture Land Resource Planning Unit in partnership with custodians of KBA system – Ministry of Environment, Birdlife International and IUCN 	<ul style="list-style-type: none"> Kava farmers through lease and/or loan applications and Mataqali through farm land use planning 	<ul style="list-style-type: none"> Short/medium term 	<ul style="list-style-type: none"> Update planning maps used by Ministry of Agriculture's Land Resource Planning Unit to include Key Biodiversity Areas and existing and proposed protected Areas

EXAMPLE VOLUNTARY COMMITMENT

The Ministry of Agriculture Land Use Planning Unit commits to updating its current planning maps to include protected areas and Key Biodiversity Areas and to discourage kava cultivation in these areas when screening kava farming lease and loan applications.

4.2 Coastal fisheries

This assessment finds that the current fisheries management efforts still have limitations in reversing the decline in coastal fisheries resources and protect marine biodiversity from the threat of overfishing, pollution and the alteration of coastal habitats. The BIODIV project aims to propose strategic interventions in six thematic areas to address the gaps in coastal fisheries management, and guides the development of voluntary commitments at all levels (national, communities and specific groups within the coastal fisheries sub-sectors) to ensure the ecological sustainability of the sub-sector.

The overarching problem that requires addressing can be stated as follows:

The high demand from the coastal fisheries sector had led to overfishing of coastal fisheries resources and threatened important marine habitat and the survival of key marine resources, especially endemic marine species.

The specific problem is that at current level of demand and projected fishing intensities to meet the growing demand, the current fishing practices in coastal areas is incompatible with coastal fisheries management and marine biodiversity conservation objectives.

The review of the coastal fisheries sector recommends 10 strategic actions (scenarios) that can be used to guide the development of voluntary commitments by both industry players and regulatory and support agencies ("Enablers"). A multi-pronged approach is recommended, with strategic actions across a number of thematic areas including: policy and legislation, research, management tools, compliance and enforcement, economic incentives and financing, and alternative/enhanced livelihood opportunities. The strategic actions are presented in tabular form below. Each strategic action is followed by examples of possible voluntary commitment(s) relevant to the action. It is the intention that the 10 recommended strategic actions and proposals for voluntary commitments be used to frame the 'national dialogue' phase of the BIODIV2030 project in Fiji. The example voluntary commitments do not contain specific time frames as these will need to be elaborated in consultation with stakeholders during the national dialogue phase. The final voluntary commitments will need to:

- Be formalised in writing
- Be made public
- Contain quantitative elements
- Contain time frames (intermediate dates, final dates for the achievement of goals)
- Designate the players and resources planned to implement actions and reach the targets
- Include SMART indicators and objectives which are specific, measurable, achievable, relevant, time-bound
- Be accompanied by a robust monitoring and assessment system managed on a national scale.¹²⁶

¹²⁶ Sourced from the BIODIV2030 document entitled: Common landmarks for high-quality voluntary commitments. Internal document. 23/11/2021

Proposed Voluntary Commitment Focus: Traditional and Customary Management practices

Problem addressed: The need for inshore fisheries management is a priority for marine ecological sustainability in Fiji and national effort needs to be complemented by other key stakeholders, one of the key ones are the communities with Customary Fishing Rights.

Strategic Action 1: Implement community-based fisheries management practices, such as the traditional practice of “TABU”, to complement existing national fisheries management programs

Lead and support agencies	Target Audience	Time Horizon	Supporting Actions
<ul style="list-style-type: none"> • Bose Vanua (Traditional Leaders) with support from Ministry of Fisheries, Ministry of iTaukei Affairs, iTaukei Affairs Board, NGOs 	<ul style="list-style-type: none"> • Fishermen/ village tikina and yavusa • Communities 	<ul style="list-style-type: none"> • Short/medium 	<ul style="list-style-type: none"> • Ministry of Fisheries/ NGOs provides support by providing technical advice on certain months of the year to introduce “tabus” • Ministry of Fisheries to support communities in the enforcement of the tabu areas. • Ministry of Fisheries/ NGOs financially/in-kind support fish wardens in implementing their duties.

EXAMPLE OF VOLUNTARY COMMITMENT

Provincial Bose Vanua (Traditional Leaders) commit to introduce tabus at certain times of the year to sustainably manage their coastal resources.

Proposed Voluntary Commitment Focus: Governance and Fisheries Management Structures

Problem addressed: Fisher stakeholders in Fiji are fragmented and there is no effective governance system to represent the group.

Strategic Action 2: Establish national, regional and sub-regional Fishers Associations with a clear mandate to represent the interest of coastal fishers and to promote ecological sustainability

Lead and support agencies	Target audience	Time Horizon	Supporting Actions
<ul style="list-style-type: none"> • Provincial Yaubula Support Team, District Advisory Councils, Fishing industry 	<ul style="list-style-type: none"> • All Fisheries Association and stakeholders who invested in the coastal fisheries sub-sector 	<ul style="list-style-type: none"> • Short term 	<ul style="list-style-type: none"> • Governance system will need support from national government and established groups.

EXAMPLE VOLUNTARY COMMITMENTS

Provincial Yaubula Management Support Teams commit to establish a system of Fishers Associations at provincial, district and village levels.

The private sector including middlemen and traders commit to actively participate in the operation of Fishers Associations.

Proposed Voluntary Commitment Focus: Research

Problem addressed: Knowledge of the status and trends of coastal fisheries, including socio-economic information on fishing communities, is key to managing coastal fisheries resources for sustainability. Adequate coastal fisheries data and information that are timely and reliable, providing a basis for sound fisheries development, better decision-making and responsible fisheries management programmes are currently not available.

Strategic Action 3: Conduct applied research and develop a rapid assessment protocol to guide fisheries development

Lead and support agencies	Target audience	Time Horizon	Supporting Actions
<ul style="list-style-type: none">Provincial Yaubula Support Team and Village Environment Committees with support from Ministry of Fisheries, Ministry of Environment, SPC and relevant NGOs	<ul style="list-style-type: none">Coastal fishers, policy-makers and leaders	<ul style="list-style-type: none">Medium term	<ul style="list-style-type: none">Consolidation of previous and current site based fisheries research undertaken as part of donor funded projects.

EXAMPLE VOLUNTARY COMMITMENTS

Provincial Yaubula Management Support Teams and Village Environment Committees commit to develop a traditional ecological knowledge framework for a community-based rapid assessment protocol that can be efficiently implemented to guide decisions on coastal fisheries development initiatives.

Provincial Yaubula Support Teams and Village Environment Committees commit to strengthening their partnership with government and research institutions for the establishment of national fisheries research priorities, coordination of research activities and integration and mainstreaming of results into development and management of coastal fisheries at national, sub-national and community levels.

Proposed Voluntary Commitment Focus: Coastal fisheries management tools

Problem addressed: While current coastal fisheries management tools such as LMMAs, the seasonal ban on groupers, and the total ban on protected species are effective, a more comprehensive suite of tools is required to address the full range of causes of overfishing.

Strategic Action 4: Develop and implement new and additional tools to complement existing coastal fisheries management tools

Lead and support agencies	Target audience	Time Horizon	Supporting Actions
<ul style="list-style-type: none"> Provincial Yaubula Management Support Teams and Village Environment Committees, Ministry of Fisheries, SPC and conservation NGOs 	<ul style="list-style-type: none"> Fishers Middlemen Traders 	<ul style="list-style-type: none"> Medium/Long term 	<ul style="list-style-type: none"> Seasonal ban during spawning period for other highly targeted species such as mullet, trevally, rabbitfish, surgeonfish, unicornfish, parrotfish, emperor fish, snapper, sweetlips, goatfish, crabs and lobster Selectivity Controls: Gear Modification and Restriction. Ban on destructive fishing methods including gillnet and night spear diving. Minimum and maximum size limit Catch limits: Total allowable catch and quotas systems and catch shares Effort limits: Limited access (Licenses) to a fishing ground, number of lines or hooks and trip

EXAMPLE VOLUNTARY COMMITMENTS

The private sector, including middlemen and traders, in collaboration with the Ministry of Fisheries, SPC and conservation NGOs commit to identify new coastal fisheries management tools and provide the enabling environment for implementation at the qoliqoli level.

Fishermen and communities commit to implement a variety of coastal fisheries management tools on their respective fishing grounds.

Middlemen and traders commit to align their dealings with fishermen with conservation objectives and to apply coastal fisheries management tools (e.g. size limits).

Proposed Voluntary Commitment Focus: Compliance and Enforcement

Problem addressed: At current human resourcing levels the Ministry of Fisheries is challenged to effectively enforce and monitor compliance among actors along the coastal fisheries value chain. A system of community-based 'fish wardens' has been introduced in recent years, but its effectiveness is compromised due to these positions being voluntary, with little resourcing for enforcement.

Strategic Action 5: Introduce a cash incentive for community fish wardens and seek to more actively involve municipal market staff and traders in management and enforcement

Lead and support agencies	Target audience	Time Horizon	Supporting Actions
<ul style="list-style-type: none">Provincial Yaubula Management Support Teams and Village Environment Committees, Ministry of Fisheries, SPC and conservation NGOs	<ul style="list-style-type: none">FishersMiddlemenTraders	<ul style="list-style-type: none">Medium/Long term	<ul style="list-style-type: none">Identify financial sources to pay fish wardenDevelop compliance and enforcement frameworkCapacity building for municipal market staff

EXAMPLE VOLUNTARY COMMITMENTS

Communities commit to report illegal fishing activities to fish warden and relevant authorities.

The Ministry of Fisheries commits to training fish wardens for the necessary knowledge and skills needed and to pay them for their duties.

Proposed Voluntary Commitment Focus: Economic Incentives and Financing

Problem addressed: There are currently no market-based economic incentives to promote sustainable fishing methods in the coastal fisheries sector

Strategic Action 6: Introduce a system of eco-labelling and catch certification

Lead and support agencies	Target audience	Time Horizon	Supporting Actions
<ul style="list-style-type: none"> Provincial Yaubula Management Support Teams and Village Environment Committees, Ministry of Fisheries in partnership with Ministry of Commerce, Trade, Tourism and Transport and traders 	<ul style="list-style-type: none"> Fishers Traders 	<ul style="list-style-type: none"> Medium/Long term 	<ul style="list-style-type: none"> Feasibility studies into eco-labelling and catch certification

EXAMPLE VOLUNTARY COMMITMENT

The Ministry of Fisheries, in partnership with the Ministry of Commerce, Trade, Tourism and Transport, commits to introducing a system of eco-labelling and catch certification.

Strategic Action 7: Attach sustainability conditions to fishing loans offered by the Fiji Development Bank and other government assistance programmes

Lead and support agencies	Target audience	Time Horizon	Supporting Actions
<ul style="list-style-type: none"> Provincial Yaubula Management Support Teams and Village Environment Committees, Ministry of Fisheries and conservation NGOs Fiji Development Bank 	<ul style="list-style-type: none"> Fishers 	<ul style="list-style-type: none"> Medium/Long term 	<ul style="list-style-type: none"> Integration of Environmental and Social Safeguards into FDB loan systems

EXAMPLE VOLUNTARY COMMITMENT

Financial institutions such as the Fiji Development Bank, and government assistance programmes commit to incorporating conditions for sustainable fisheries practices into their programmes, to orient beneficiaries on these conditions and to provide incentives for beneficiaries that have evidence of complying.

Proposed Voluntary Commitment Focus: Alternative/Enhanced Livelihood Options

Problem addressed: Many of the management measures needed to address the issue of overfishing will negatively impact on the economic well-being of coastal fishermen in the short-term.

Strategic Action 8: Introduce value-adding and alternative livelihood opportunities for coastal fishing communities

Lead and support agencies	Target audience	Time Horizon	Supporting Actions
<ul style="list-style-type: none">Provincial Yaubula Management Support Teams and Village Environment Committees, Ministry of Fisheries in partnership with donors and conservation NGOs	<ul style="list-style-type: none">Fishers	<ul style="list-style-type: none">Medium term	<ul style="list-style-type: none">MaricultureEco-tourismNon-marine based livelihood optionsValue-adding of coastal fisheries productsInstallation of Fish Aggregating Devices (FAD) in strategic areas

EXAMPLE VOLUNTARY COMMITMENTS

Coastal fishers and traders commit to working with the Ministry of Fisheries and national government to develop feasible and sustainable alternative livelihood options to replace or reduce harvesting of coastal fisheries resources.

The Ministry of Fisheries and donors commit to supporting viable alternative livelihood options such as mariculture, non-marine based livelihood options, value-adding of coastal fisheries products and installation of Fish Aggregating Devices (FAD) in strategic areas.

Proposed Voluntary Commitment Focus: Policy and Legislation

Problem addressed: Consolidated management of the coastal fisheries sub-sector is dependent on the revision of existing fisheries management laws to include certain details such as fish size limit and enforcement arrangements.

Strategic Action 9: Update and enact the Coastal Fisheries Management Bill

Lead and support agencies	Target audience	Time Horizon	Supporting Actions
<ul style="list-style-type: none"> Ministry of Fisheries Economic Policy, Planning and Statistics Division, in collaboration with Solicitor General's Office 	<ul style="list-style-type: none"> All stakeholders in the coastal fisheries sub-sector 	<ul style="list-style-type: none"> Medium term 	<ul style="list-style-type: none"> Bill requires input from agencies involved in biodiversity conservation

EXAMPLE VOLUNTARY COMMITMENTS

The Ministry of Fisheries commits to review and update content of the current Fisheries Act to include ecological sustainability considerations and to consult the Ministry of Environment, conservation NGOs and traders for their inputs.

The Solicitor General's Office undertakes to fast track the finalisation and presentation to parliament of the Coastal Fisheries Management Bill for enactment.

Strategic Action 10: Develop and adopt clear coastal fisheries management guideline

Lead and support agencies	Target audience	Time Horizon	Supporting Actions
<ul style="list-style-type: none"> Ministry of Fisheries and conservation NGOs Provincial Yaubula Support Teams and Village Environment Committees CChange 	<ul style="list-style-type: none"> Fishers and traders 	<ul style="list-style-type: none"> Medium term 	<ul style="list-style-type: none"> Seek and secure inputs of conservation NGOs and build on existing efforts such as the Set Size by CChange and align with the Coastal Fisheries Bill Validate guideline and disseminate to fishers and traders

EXAMPLE VOLUNTARY COMMITMENT

The Ministry of Fisheries commits to develop a clear and simplified guideline such as the 4FJ program by CChange and Provincial Yaubula Management Support Teams and Village Environment Committees commit to adopt this guideline and share it with fishers and traders.

5. The way forward: Stakeholder engagement and mobilisation plan¹²⁷

This concluding section provides guidance to the BIODEV2030 proponents on the next phase of the project which is the 'national dialogue phase'. The 'national dialogue phase' is geared at further socialising and discussing the recommended strategic interventions with stakeholders with the aim of facilitating and securing 'voluntary commitments' based on the recommended intervention strategies/scenarios presented in Section 4.

5.1. Stakeholder mapping

As requested in the Terms of Reference, the tables that follow expand on the initial stakeholder analyses contained in the main report by adding information on each stakeholder's interests and motivations.¹²⁸ As motivation and interest are linked, these are combined into one column. Interests and motivations are presented in the context of the stakeholders' being interested/motivated to address the biodiversity threats associated with their respective industries. We have added a column for 'influence' as a stakeholder's ability to effect change is linked to their level of influence.

The tables are followed by graphs showing the relative positions of each of the key stakeholders in relation to their interest (y-axis) and influence (x-axis). This is a commonly used approach in conducting stakeholder analyses¹²⁹. Based on the information from the stakeholder mappings in conjunction with insights gained by the consultants from their discussions with industry stakeholders, stakeholder engagement and mobilisation strategies are proposed for each of the sectors.

Table 14 – Actors directly involved in the kava value chain

Actor	Role	Interest/Motivation	Influence
Kava nursery operators	Produce kava planting material and sell to farmers. Most farmers source their own planting material so the number of nursery operators is small.	Low Issue of biodiversity conservation does not affect their livelihood	Low
Kava farmers	Produce kava varieties required by the market. Farmers contribute land, labour and expertise, etc. Harvest, dry, store and sell at farm gate or to middlemen.	Low Conventional wisdom amongst farmers is that recently cleared forest land presents the best growing conditions for kava.	High It is within the farmers' ability to adapt their farming practices or adopt alternatives. This would require them to be convinced that adaptations or alternative farming systems offer similar or greater levels of productivity and profitability.

¹²⁷ Output 2 of the consultancy.

¹²⁸ IUCN. 2022. BIODEV2030 Situation analysis of economic sectors. Terms of Reference

¹²⁹ Bryson, John M., (2004) "What to do when stakeholders matter: stakeholder identification and analysis techniques" from Public Management Review 6 (1) pp.21-53, London: Routledge

Actor	Role	Interest/Motivation	Influence
Traders/ middlemen	Buy fresh or dried kava from farmers. Transport, store, sort, grade package and sell to end user or exporter	Low They are interested in receiving high quality, well cleaned and dried kava. How the kava is produced is of little interest to them.	Medium Traders and middlemen could use their purchasing power to influence farmers to adapt their farming practices. However this would require all traders and middlemen to agree.
Processors/ exporters	Sort, grade, semi process, package, store, and sell to overseas market	Medium Exporters see the benefit of protecting the forest resource base from which kava is derived, although they are currently not generally aware of the impact that kava farming is having on biodiversity. Potentially interested in certification but are concerned about extra printing and packaging costs.	Medium Exporters could use their purchasing power to influence farmers to adapt their farming practices. However, they have to compete with the strong domestic market for supply and high domestic market prices can make it unprofitable for them to export
Biosecurity (BAF)	Treatment, inspection, certification	Low/Medium Farm access roads into forests can be pathways for alien invasive species. However, there is currently little awareness of this issue.	Medium/High As a legislated regulatory authority BAF potentially has a high level of influence over exporters. However, the majority of production is for the domestic market over which they have little influence.
Land transporters (eg. WG, DHL etc.)	Transport packaged products from Suva to Nadi Airport	Low	Medium They ave the ability to disrupt the value chain
Wholesalers	Clears, stores, and distributes the product to domestic retailers	Low/medium Of the opinion that purchasing behaviour in the domestic market is driven purely by price and quality considerations	Wholesalers could use their purchasing power to influence farmers to adapt their farming practices but there is currently little interest
Consumers	The customer at the end of the chain	The assumption is that domestic markets are not sufficiently environmentally aware to care about biodiversity issues, but this requires testing. Purchasing preference and behaviour of the export market is unknown.	High Consumers could use their purchasing power to influence farmers to adapt their practices, but a number of pre-conditions would need to be in place for this to happen, e.g. no price increase, no interruption to supply, no impact on quality, etc.

Table 15 – Actors in-directly involved in the Kava value chain – ‘Enablers’

Actor	Role	Interest/Motivation	Influence
Ministry of Agriculture	Promotes the development, formalisation and protection of the industry through policy, legislation, regulation, research, training, land-use planning and extension. Has a dedicated ‘Kava Development Programme’	Medium Motivation is on increasing kava production volumes to meet production targets. Would be interested to support achievement of national biodiversity conservation targets but lack awareness of the issue and the expertise to do so.	Medium/High Potentially have a high level of influence through the Kava Bill/Act, but only if its review includes provisions to mitigate against forest loss
National Kava Task Force	Multi-stakeholder structure representing government, industry players and technical support organisations whose role is to develop, formalise and protect the industry	Low/Medium The issue of forest and biodiversity loss is not currently a topic that receives attention. This could change if awareness of members is raised.	Medium/High The Task Force has the ability to facilitate agreements and voluntary commitments among its members
Fiji Crop and Livestock Council / Kava Growers Association	Its role is to raise the profile of farmers involved in crops and livestock production; act as the apex forum for advocacy and key services to respond to the needs of agriculture with the view to drive growth in the industry.	Low Do not currently view forest loss as a result of kava farming as a serious issue.	Low/Medium Kava Growers Association does not have strong linkages to farmers as kava farmers’ networks are poorly developed. The FCLC is supported by EU development aid and this link could potentially be leveraged to increase its influence.
Pacific Horticultural Agricultural Market Plus Programme	A regional programme aimed at improving quality assurance systems and standards to ensure that market access is maintained and the volume and quality of exports increased. PHAMA is an Australian Government initiative cofounded by New Zealand.	Medium/High PHAMA is more focused on securing market access through improving quality assurance systems and standards. Environmental management issues do fall within its scope but it requires more evidence-based information to prioritise the issue.	Medium While PHAMA can only play an advisory role, it is a credible and respected programme in the industry and amongst government. Its influence on addressing forest-loss issues linked to kava production could be increased by leveraging its links to its Australian and New Zealand development partners.

Actor	Role	Interest/Motivation	Influence
Fiji Development Bank	Provides low-interest agricultural loans to farmers that have formal agricultural leases. Types of loans include 'Farm Development Loans' and loans to engage in 'root crop' farming including Kava.	Low/Medium With respect to agricultural loans, the Fiji Development Bank takes its direction from the Ministry of Agriculture. They are likely to agree to put in place conditions on loan agreements when they are engaged.	Medium/High Conditional loans would be an effective way of intervening in kava farming systems. However only a small amount of kava farmers apply for agricultural loans.
Pacific Community (SPC) Land Resources Division	Research and technical support to the agriculture sector. Relevant programmes include: POETCom - a programme to promote organic farming; and Safe Agricultural Trade Facilitation for Economic Integration in the Pacific (SAFE Pacific) project which includes a focus on sustainable agricultural value chains for Kava production in the region.	Medium/High but require convincing of the extent and seriousness of the issue. SPC is not an environmental organisation and biodiversity conservation is not part of its mandate. However, it does provide technical support on sustainable land and forest management and agro-forestry.	Medium/High SPC has the ability to influence both regional and national forestry and agricultural policy as well as conduct technical research and provide training to agriculture extension workers,
Pacific Regional Environment Programme (SPREP)	Inter-governmental organisation for environment with a focus on biodiversity conservation	Medium/High Being based in Samoa, SPREP is less directly engaged with Fiji than SPC. The issue of biodiversity loss due to deforestation has long been a concern but to date there have been no interventions focussing on the Kava industry specifically. The upcoming EU funded 'Pacific Bioscapes' will focus on this issue at its proposed project sites of Gau and Ra.	Medium/High Like SPC, SPREP has the ability to influence both regional and national policy makers, although its influence is limited to Ministries of Environment with little engagement with other sectors.
Food and Agriculture Organisation (FAO)	Provides technical support to Agriculture, Forestry and Fisheries sectors but is not currently active in addressing Kava deforestation issues.	Medium/High Given its focus on agriculture and forestry, FAO is potentially an important partner in supporting efforts to address deforestation linked to Kava production. It is likely to be interested to provide support if representations are made.	High FAO is a well-established and credible technical partner for both the forestry and agriculture sectors in Fiji. It is a key player in supporting the Agriculture Census which could be an important tool in monitoring the extent of forest conversion for kava cultivation.

Actor	Role	Interest/Motivation	Influence
Conservation NGOs	Active in the field of biodiversity and environmental conservation but do not as yet have established programmes to address deforestation linked to the kava industry.	Medium/High These organisations tend to operate at project site levels where they play an important role in raising awareness and stimulating behaviour change. WCS has facilitated ecosystem-based management plans for Ovalau and Kubula district which are both kava growing hotspots. CI and IAS have facilitated ICZ Management Plans in Ra.	Medium/High These organisations have access to influencing policy and practice through their representation on a number of government environmental committees and working groups.

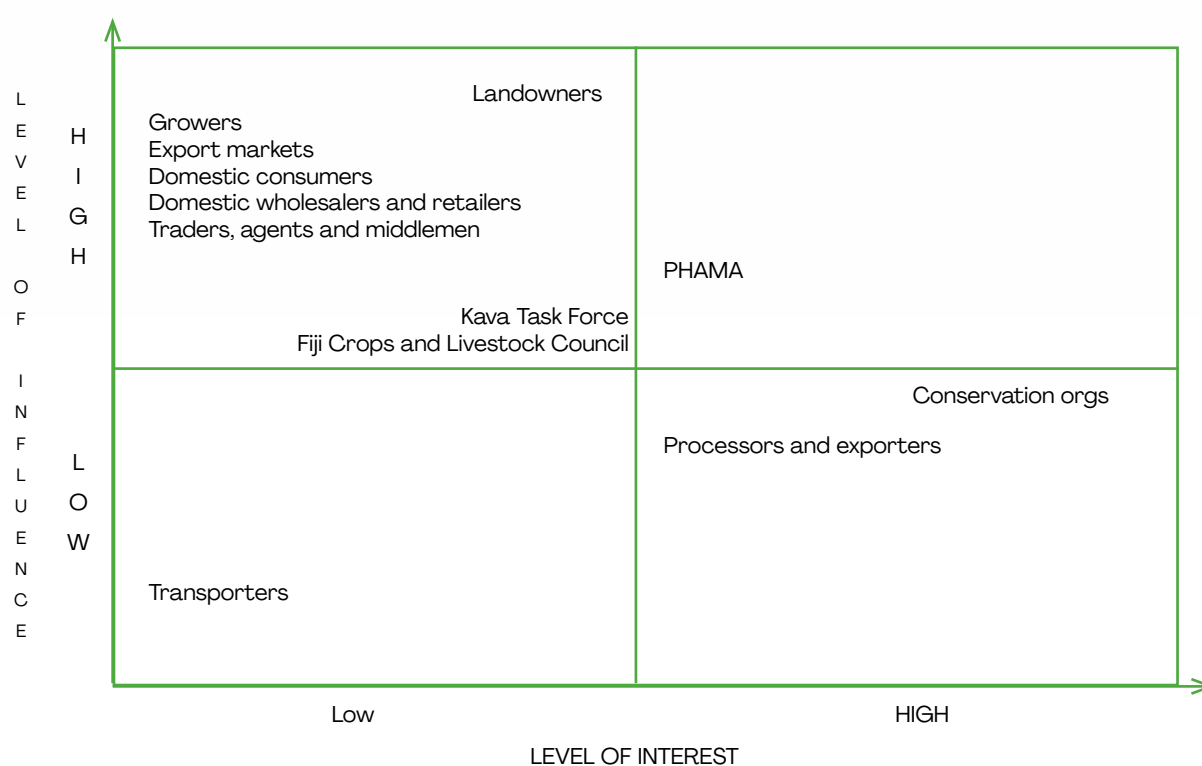


Figure 22 - Interest and influence of players in the Kava sector to address biodiversity loss through voluntary commitments

Table 16 – Actors directly involved in the Coastal Fisheries value chain

Actor	Role	Interest/Motivation	Influence
Fishermen	Catches, gleans or traps various types of coastal fisheries resources and sell catches to an available market. Fishermen contribute gears, time, and expertise, etc. Harvest and sell fresh or sell after value-adding.	Medium- Depending on which fishermen, those that have traditional fishing rights would have more interest in ecological sustainability, as compared to those from outside.	High- Fishermen are well-versed with fishing seasons and trends on their catch and can collectively agree to implementation of coastal fisheries management strategies to ensure ecological sustainability.
Traders/ middlemen	Buy coastal fisheries resource from fishermen. Transport, store, sort and sell to local end user or exporter	Low- They are interested in receiving good grade and fresh coastal resources, with no or little interest in how resources were harvested.	Medium Traders and middlemen could use their purchasing power to influence fishermen to modify fishing practices to ensure ecological sustainability.
Biosecurity (BAF)	Sort, grade, semi process, package, store, and sell to overseas market	High- BAF is very strict in ensuring biodiversity regulations are followed when trading outside of the country.	High- Being part of the national government, BAF has high influence in implementation of government policies.
Airfreight and seafreight operators	Transport packaged products from Suva to Nadi Airport	Low	Medium They ave the ability to disrupt the value chain
Importers and wholesalers	Clears, stores, and distributes the product to domestic retailers	Low/medium Of the opinion that purchasing behaviour in the domestic market is driven purely by price and quality considerations	Wholesalers could use their purchasing power to influence farmers to adapt their farming practices but there is currently little interest
Consumers	The customer at the end of the chain	The assumption is that domestic markets are not sufficiently environmentally aware to care about biodiversity issues, but this requires testing. Purchasing preference and behaviour of the export market is unknown.	High- Consumers could use their purchasing power to influence farmers to adapt their practices, but a number of pre-conditions would need to be in place for this to happen, e.g. no price increase, no interruption to supply, no impact on quality, etc.

Table 17 – Actors in-directly involved in the Coastal Fisheries value chain – ‘Enablers’

Actor	Role	Interest/Motivation	Influence
Ministry of Fisheries	MoF is the lead Government agency and first point of contact for coastal fisheries and offshore areas. Responsible for fisheries policy development and implementing fisheries legislation (Fisheries Act and Offshore Fisheries Management Decree) to regulate sustainability of and management of different fisheries resources, including surveys of all iQoliqoli (both coastal and freshwater).	MoF provide the policy guidance for both coastal fisheries management and development. Has led programs to ensure ecological sustainability in the coastal fisheries industry	High level of influence in legislating and providing the enabling environment for enhanced coastal fisheries management
Ministry of iTaukei Affairs (MiTA) iTaukei Affairs Board (TAB) iTaukei Lands and Fisheries Commission (TLFC)	Responsibilities include the development, maintenance and promoting policies that provide for the continued good governance and wellbeing of the iTaukei. Included in TLFC's duties are the surveys of the boundaries and registering ownership of customary fishing rights. MiTA and ITAB have the widest coverage and presence in the rural and catchment areas compared to any other government service. They are represented in all villages and districts and are part of the Yaubula Management Institution and Policy Advisory Committees.	Medium- Linking national government development objectives and community needs, including coastal communities. Also has an established structure of Conservation Officers in all Provincial Council Offices	High level of influence for implementation on the ground level
Fiji Police Force & Fiji Navy Force	Responsible for law enforcement, security and defence of the country and in particular for policing and enforcement of fisheries regulation and policy all over Fiji.	Low- Lately, the security force has been engaged in some coastal fisheries compliance and enforcement program. More capacity building is needed	High level of influence for compliance and enforcement component of coastal fisheries management
Department of Environment	To establish environment policies, ensure environmental safeguards in development projects, managing pollution, wastes and hazardous substances; sustainable management of natural resources i.e. soils, water, watersheds, flora and fauna, land use, indigenous ecosystems and human health; air quality monitoring and protection; and focusing on clean industrial production. They are also responsible for overseeing the protection of indigenous ecosystems and biological diversity.	High- Leading government department for biodiversity conservation and protection and very influential in ensuring ecological sustainability in the marine environment. Recently, support and launched a Marine Park initiative at Naidiri village, Malomalo, Nadroga	High influence as the institution has the mandate to oversee biodiversity conservation and protection throughout Fiji

Actor	Role	Interest/Motivation	Influence
Commissioner's Office at Divisional level	Issue fishing license to fishermen	Government lead at Division level but focus is mainly on giving fishing licence for fisheries production	High influence at Division level and supporting national level policies
Fiji Development Bank	Provides low-interest fishing loans to fishermen and it excludes the purchase of second hand outboard motors. Interested fishermen need to demonstrate fishing experience appropriate to the loan application.	Low- Mainly support fishermen for production	Low- Absence of a system to track practices of fishermen that it support
Food and Agriculture Organisation (FAO)	Provides technical support to Agriculture, Forestry and Fisheries sectors, including coastal fisheries.	High- Have technical expertise in coastal fisheries management	Medium influence at national level, as role is mainly to state and not influence decision-making mechanisms
The World Conservation Union- IUCN -	IUCN has been quite active in Fiji in implementing conservation concepts and preparation Areas Conservation Strategy. IUCN had developed their own mechanism or Planning Process for MPA sites.	High- Operate at project site levels where it plays an important role in raising awareness and stimulating behaviour change. Has worked on conservation projects in Southern Lau especially for Ono and Kabara Islands. Lead marine conservation work in Macuata and Ba provinces and other parts of Fiji	Have access to influencing policy and practice through its representation on a number of government environmental committees and working groups.
Wildlife Conservation Society (WCS)	WCS has also established multiple-community conservancies and linked them with the provincial government, in some cases providing the platform for community-government coordination. WCS has trained community rangers to protect forests and wildlife.	High- Operate at project site levels where it plays an important role in raising awareness and stimulating behaviour change. Lead marine conservation work in Bua province	Have access to influencing policy and practice through its representation on a number of government environmental committees and working groups.
Coral Reef Alliance (CORAL)	CORAL is an international alliance that has adopted a multi-pronged approach to restoring and protecting coral reefs in partnership with the communities living nearest to the reefs.	High- Operate at project site levels where it plays an important role in raising awareness and stimulating behaviour change.	Have access to influencing policy and practice through its representation on a number of government environmental committees and working groups.

Actor	Role	Interest/Motivation	Influence
Conservation International (CI)	CI is a leading international conservation NGO with mission is to protect nature, and its biodiversity, for the benefit of humanity. Country office based in Suva.	High- Operate at project site levels where it plays an important role in raising awareness and stimulating behaviour change. CI is supporting the Lau Seascape project and leading marine conservation work in Lau province and the Ringgold reef system	Have access to influencing policy and practice through its representation on a number of government environmental committees and working groups.
Partner in Community Development (PCDF)	A local NGO that acknowledges existing community structures and work with their leaders to ensure the inclusive participation of women, young people and minority groups, building local capacity to understand issues, take action and lead change.	High- Operate at project site levels where it plays an important role in raising awareness and stimulating behaviour change. Lead marine conservation work in Lomaiviti province	Have access to influencing policy and practice through its representation on a number of government environmental committees and working groups.
Pacific Blue Foundation	Pacific Blue Foundation is a non-profit public benefit charitable trust. Pacific Blue Foundation provides basic research, education, and dissemination of sustainable practices in coastal regions with the ultimate goal of preserving and promoting the biological and cultural diversity of the region.	High- Operate at project site levels where it plays an important role in raising awareness and stimulating behaviour change.	Have access to influencing policy and practice through its representation on a number of government environmental committees and working groups.
Marine Ecology Consulting	Company for coastal and marine ecology assessments as part of Environmental Impact Assessments (EIA), as well as offering marine conservation and management advice, educational courses and opportunities, and tourism-based marine programmes.	High- Operate at project site levels where it plays an important role in raising awareness and stimulating behaviour change. Lead marine conservation work in Waitabu, Taveuni	Have access to influencing policy and practice through its representation on a number of government environmental committees and working groups.
Global Vision International (GVI)	Global Vision International (GVI), Fiji's Marine Research and Conservation Project aims to conduct research that will facilitate long term benefits to the local communities and help guarantee food security for future generations. Program is designed to empower communities by providing education and assistance in the facilitation of locally managed marine protected areas (MPAs).	High- Operate at project site levels where it plays an important role in raising awareness and stimulating behaviour change. Lead marine conservation work on the Yasawas, Beqa Island, Dawasamu and part of Lomaiviti	Have access to influencing policy and practice through its representation on a number of government environmental committees and working groups.

Actor	Role	Interest/Motivation	Influence
Mamanuca Environment Society (MES)	MES is a local NGO with its objectives being, an initiative to address environmental issues in the region and specifically work towards the protection and betterment of the region's marine and terrestrial environment. Recent MES projects include Water Quality Monitoring, Reef Check Surveys, Liquid Waste Management, as well as ongoing education and dialogue with stakeholders at community and commercial levels.	High- Operate at project site levels where it plays an important role in raising awareness and stimulating behaviour change. Lead marine conservation work within the Mamanuca group of islands	Have access to influencing policy and practice through its representation on a number of government environmental committees and working groups.
Fiji Locally Managed Marine Areas (FLMMA) Network	A leading conservation organization in the Fiji in promotion of locally managed marine areas. FLMMA had worked in outer islands in central Lau and other islands in other provinces in Fiji. Works to promote and encourage the preservation, protection and sustainable use of marine resources in Fiji by the traditional users of marine resources.	High- Operate at project site levels where it plays an important role in raising awareness and stimulating behaviour change. Lead marine conservation work in Kadavu, Ra, Nadroga and Lomaiviti provinces	Have access to influencing policy and practice through its representation on a number of government environmental committees and working groups.
Women in Fisheries Network Fiji	WiFN was set-up as a network of interested scientists, gender and development scholars having a common interest in addressing the involvement of women in the fisheries sector.	High- Operate at project site levels where it plays an important role in raising awareness and stimulating behaviour change.	Have access to influencing policy and practice through its representation on a number of government environmental committees and working groups.
Fiji Environmental Law Association (FELA)	The primary purpose of FELA is to promote the sustainable management of natural resources through law. FELA was formed with the support and assistance of the Oceania Office of the International Union for the Conservation of Nature (IUCN) as a result of concerns that many in the legal community had about the apparent lack of general awareness on issues pertaining to the environment. Despite Fiji having a wide range of environmental laws, it was generally accepted that many were neither effectively implemented nor enforced.	High- Operate at project site levels where it plays an important role in raising awareness and stimulating behaviour change. FELA's purpose is to promote the sustainable management of natural resources through law.	Have access to influencing policy and practice through its representation on a number of government environmental committees and working groups.

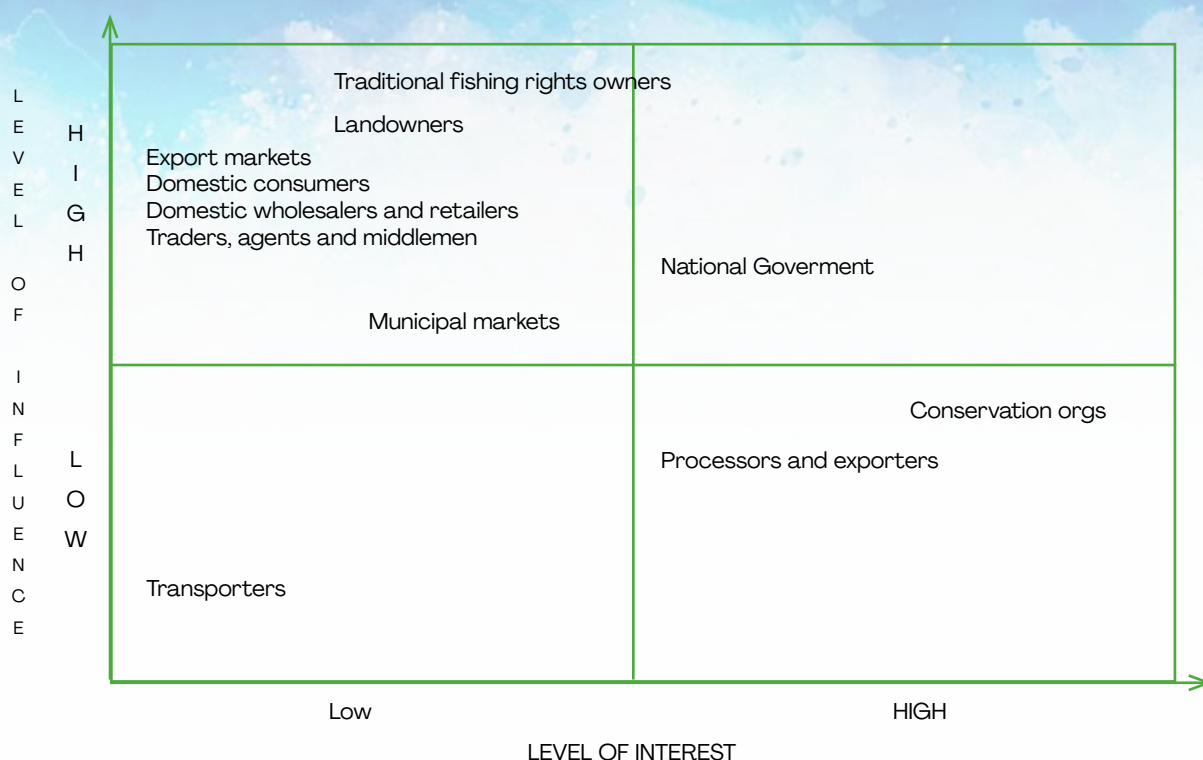


Figure 23 - Interest and influence of players in the Coastal Fisheries sub-sector to address biodiversity loss through voluntary commitments

5.2 Stakeholder mobilisation strategies

i. Kava industry

From the stakeholder consultations and mapping exercise it is evident that the interest of most actors in the kava industry is currently too low to motivate them to actively engage with the issue of biodiversity loss linked to deforestation. This is also the case when it comes to a number of the organisations tasked with enabling the industry. A key component of the mobilisation strategy will therefore need to focus on committing resources to urgently raise the profile of the issue among industry players and enablers alike. However, for awareness raising to be effective, the information used will need to be based on solid data; i.e. data that quantifies the extent of the problem from a spatial and temporal perspective. The scenarios for strategic interventions detailed in Section 4 identify priority research needs in this regard and it is recommended that the National Kava Coordinating Committee and the Kava Task Force urgently look into establishing a dedicated research programme. But even before this can occur, the Committee itself will need to be convinced of the escalating impact of the kava industry on Fiji's native forests and biodiversity. It is proposed therefore that IUCN, in collaboration with the Ministry of Environment and the NBSAP Forest Conservation and Species Working Groups, seek an audience with the National Kava Coordinating Committee and Task Force to raise their awareness and advocate on this issue. With their specialised understanding of ecology and ecosystems function, the conservation sector in general has a key role to play in raising the profile and advocating on this issue, as well as in partnering with agriculture and forestry stakeholders in finding workable solutions that merge the needs of the kava industry with biodiversity conservation objectives.

It will also be important to lobby donors and development partners such as the EU, Australian DFAT and New Zealand MFAT, with respect to their support to the industry through the Fiji Crops and Livestock Council and the Pacific Horticultural and Agricultural Market Access Programme. These donors are very likely to be sensitive and responsive to the issues of deforestation and biodiversity

loss and opportunities should be sought to enlist their support. The Pacific Community (SPC) and the Pacific Regional Environment Programme (SPREP) are both influential partners that should be lobbied for support.

Essentially, the mobilisation strategy for the kava industry should be based on increasing the awareness and interest of stakeholders that currently have low interest but high potential influence, i.e. stakeholders located in the top left quadrant as depicted in Figure 17, as well as boosting the influence of those stakeholders that potentially have high interest but limited influence, e.g. conservation organisations. It is recommended in Section 4 that conservation sector representatives actively seek permanent representation on all structures that have been set up to facilitate the development of the kava industry to ensure that biodiversity and forest loss issues are included in discussions, and that they are given the appropriate exposure and profile.

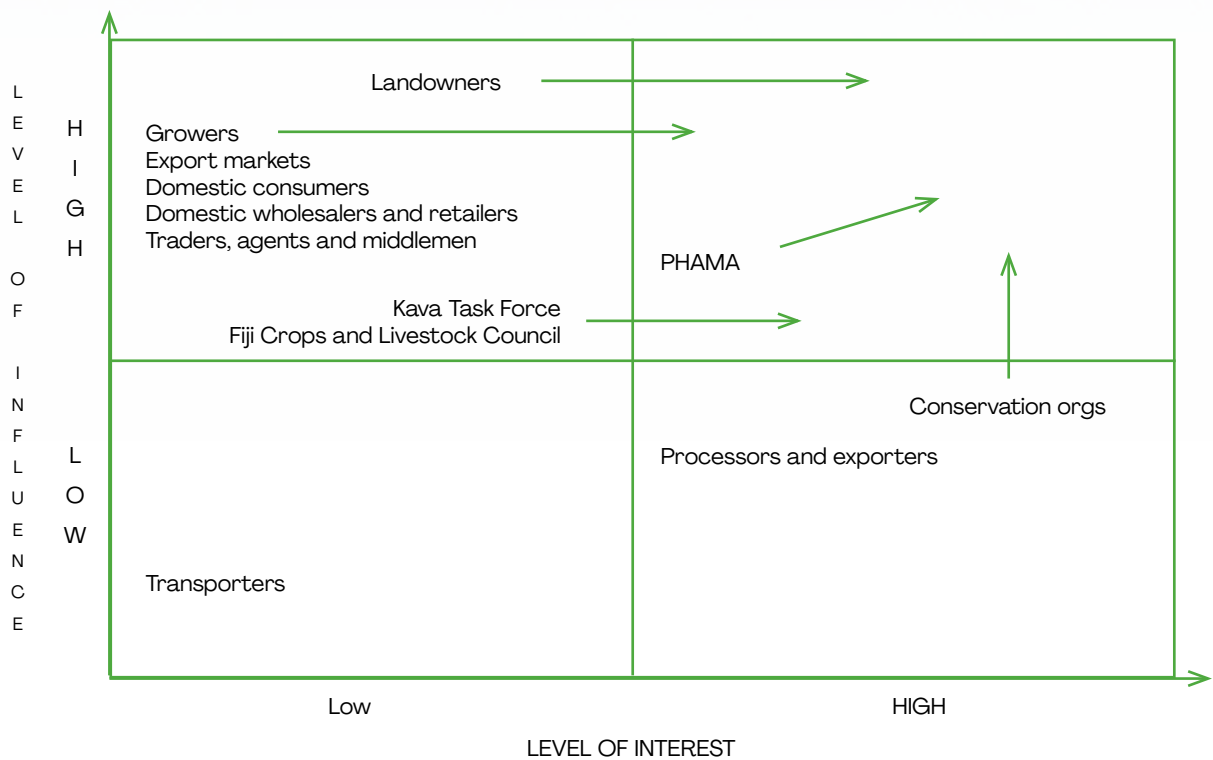


Figure 24 – Mobilisation strategy to increase the interest and influence of key kava industry stakeholders

The mobilisation strategy also needs to include activities at the local level where kava farmers and landowners need to be mobilised towards taking appropriate actions to address the ecological issues associated with kava farming. Landowners (many of whom are also farmers) in particular need to be advised about the potential losses of environmental services that they and their communities will experience if the clearance of their forest land is allowed to continue unabated. While power relationships between landowners, traditional leaders and farmers will differ from place to place, it is expected that landowners and traditional leaders will take decisions that are in the best interests of their communities, whereas farmers are more likely to be driven by personal interest. In this regard, landowners and traditional leaders could become important and effective allies in influencing kava farmers to adopt more forest and biodiversity-friendly farming techniques and methods. It is even possible for them to pass village by-laws prohibiting the clearance of native forest for kava growing, as many have done with regard to the establishment of no-take zones in their inshore fisheries areas. However, as with other players in the industry, landowners would need to see evidence of the harm caused by deforestation to the socio-economic welfare of communities, before weighing up the benefits and risks linked to both options. Income from kava production has resulted in socio-economic upliftment of many villages in kava producing areas, and alternative options proposed, that could be seen to cut-off this flow of revenue, need to clearly demonstrate that the benefits outweigh the costs.

With regard to location, it has been recommended in the main report that the focus of on-ground interventions be based on those Key Biodiversity Areas that intersect with kava producing 'hotspots'. These areas have been identified as Taveuni and Natewa/Tulunoa Peninsula in Cakaudrove province, Gau and Ovalau islands in Lomaiviti province, and Kadavu. The mobilisation strategy should therefore also include a focus on engaging stakeholders in these locations. Ovalau is the site of a recent community undertaking to adopt and implement a 'whole-of-island' ecosystem-based management approach as facilitated by Wildlife Conservation Society. Ovalau would therefore be an ideal location in which to facilitate voluntary commitments linked to the EBM plan that include both the kava and coastal fisheries sectors.

ii. Coastal fisheries sub-sector

For the coastal fisheries sub-sector, the strategy for mobilizing stakeholders would need to be built on existing framework already laid out by the Ministry of Fisheries, conservation NGOs and communities, and based on years of engagement in coastal fisheries management and marine biodiversity conservation programs. It is important to note that a mobilisation strategy for coastal fisheries management need to be guided by the following principles:

- i) be driven by a common vision and raise a collective voice for conservation and sustainable coastal resource management;
- ii) address the broader social, economic and policy factors critical to achieving ecological sustainability;
- iii) build collaborative arrangements for marine conservation and ensure stakeholder participation;
- iv) build capacity to support development and conservation efforts and align efforts with national policies; and
- v) link strategy to implementation on the ground.

For mobilisation of coastal fisheries stakeholders, implementation of specific and clear strategies or actions is needed. These mobilisation strategies can be grouped into four categories:



Institutional governance strategies

Activities geared to improve institutional arrangements, operation of the coastal fisheries stakeholders and inter-agencies engagement and collaboration that are involved in coastal fisheries management activities.



Policy alignment strategies

Programs and activities designed to align sectoral and national policies, mandates, procedures and practices for coastal fisheries management activities.



Capacity building strategies

Awareness, training, development of training tools, mainstreaming and consolidating inter-agencies education programs and consultations from fishermen to policy



Research and alignment strategies

Research and assessment and other strategies that identify opportunities for synergies of any additional coastal fisheries

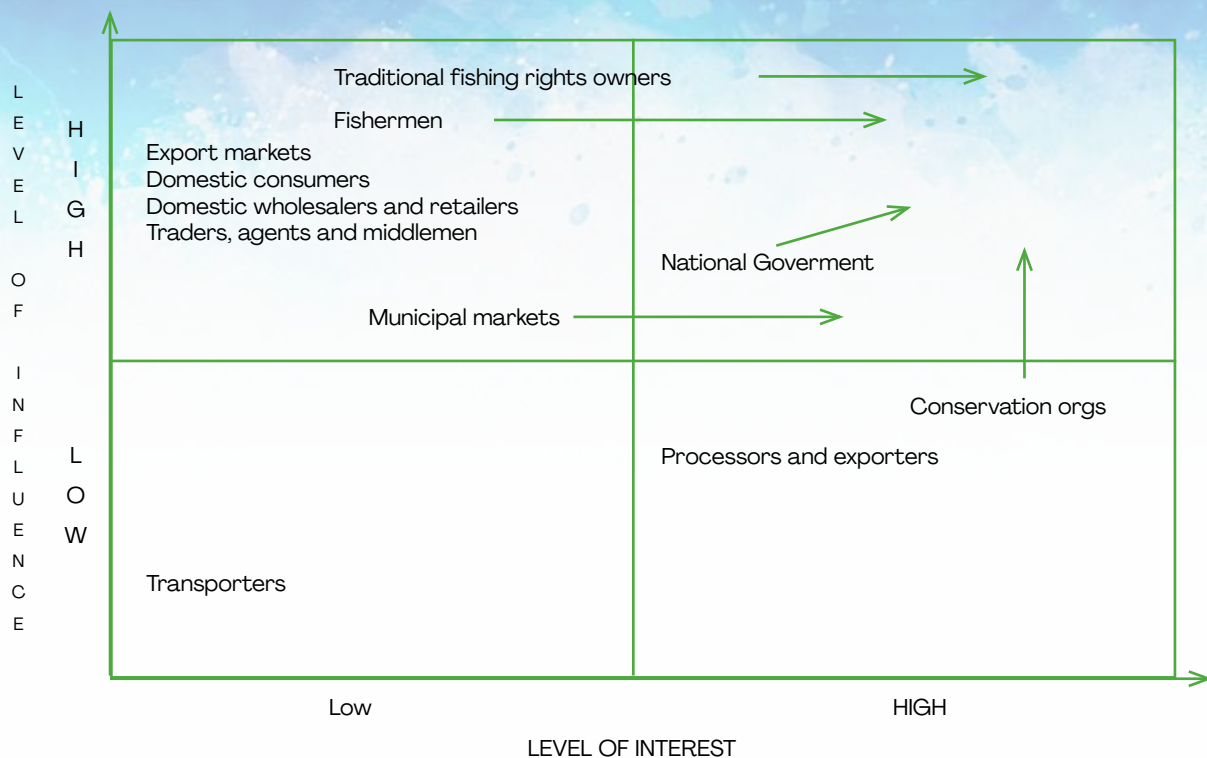


Figure 25 - Mobilisation strategy to increase the interest and influence of key coastal fisheries stakeholders

For any additional coastal fisheries management interventions to be effective, the Ministry of Fisheries and the Ministry of Environment need to work with research institutions and law experts in ensuring the enabling conditions are in place. A series of consultations with key stakeholders including local fishermen, middlemen and traders is proposed to ensure there is ownership of any coastal fisheries interventions.

The mobilisation strategy also needs to include activities at the local level where coastal fishermen and traditional fishing rights owners need to be mobilised towards taking appropriate actions to address the ecological issues associated with coastal fisheries. With regard to location, it has been recommended that the focus of on-ground interventions be based on those Special Unique Marine Areas or provinces with high marine biodiversity that overlap with overfishing 'hotspots'. These provinces have been identified as Macuata, Bua, Ba, Ra, Tailevu and Kadavu. The mobilisation strategy should therefore also include a focus on engaging stakeholders in these locations, especially for those where conservation NGOs are already implementing conservation work on the ground.

In terms of sustainable financing, the Ministry of Fisheries as the lead ministry for coastal fisheries, and other stakeholders, mainly conservation NGOs, have the ability to independently mobilise additional funding for marine biodiversity conservation. To mobilise additional financial resources, an expenditure report should to be drawn up documenting all public and private funding spent on conserving marine biodiversity in Fiji. This figure should then be compared with the funding needed to implement any new biodiversity strategy for the coastal fisheries sub-sector, in order to determine any shortfall. To make up this financing shortfall, tangible steps should be implemented to introduce economic financing tools. These steps may include increasing the Environment & Climate Adaptation Levy (ECAL) or other environment related taxes, duties or charges. The results of these undertakings will be incorporated into a next step, which is the development of a resource mobilisation strategy.

It is important to note that transformation is a long-term process, and while voluntary commitments can help to drive it, they cannot take place in isolation and are contingent on having a good understanding of the dynamics of the socio-ecological system as well as the existence of tailor-made workable technical solutions that are socially acceptable to address issues of ecological sustainability. For both Fiji's kava industry and coastal fisheries sub-sector this will require a good deal of research, awareness raising and campaigning – a pre-condition to establishing the enabling environment for effective voluntary commitments to emerge. While the BIODEV2030 project can begin to put in place the building blocks towards achieving this enabling environment, it will be challenging to facilitate meaningful or effective voluntary commitments during its limited timeframe. It is therefore equally important that the initiative give attention to securing additional resources to continue to support transformation of the industries in the medium to long-term. In the absence of a project sustainability strategy, the initiative is at risk of seeing its hard-won gains disappear once the project ends.

Annex 1 – Stakeholders consulted

Date	Organisation	Person	Designation
16/03/2022	Ministry of Agriculture	Vinesh Kumar	Permanent Secretary
	IUCN	Mason Smith	Director
22/03/2022	Ministry of Agriculture	Vinesh Kumar Sandeep Sharma Kasanita Adriano Tabualevu Mohammed Kadir Salendra Prasad Sera Bose	Permanent Secretary Regional Manager – Northern Regional Manager – Western Regional Manager – Eastern Regional Manager – Central Head of Research Chief Economist
23/03/2022	Ministry of Fisheries	Pene Balainebuli Neomai Turaganivalu Deborah Sue	Permanent Secretary (Fisheries and Forestry) Director Inshore Fisheries Director Research (Forestry)
25/06/2022	Ministry of Fisheries	Mere Namudu Nanise Kuridrani Tarisi Shaw Aporosa Rabo	Manager Coastal Fisheries (Fisheries) Principal Officer Research (Fisheries) Principal Officer Research (Fisheries) Senior Officer Extension (Fisheries)
28/03/2022	Ministry of Environment	Joshua Wycliffe Sandeep Singh Senivasa Waqairamasi	Permanent Secretary Director Senior Officer
29/03/2022	Attended Forest Management and Certification workshop hosted by Ministry of Forestry		
02/05/2022	Ministry of Environment	Senivasa Waqairamasi	Senior Officer
04/05/2022	IUCN	Ken Kassem	Head Strategic Partnerships
25/05/2022	Attended Launch of Marine Nature Park in Nadiri Village (World Biodiversity Day)		
26/05/2022	Meeting with Kava farmers at Upper Navua Gorge Ramsar Site		Cancelled
27/05/2022	Ministry of Agriculture	Adriano Tabualevu	Regional Manager Eastern Land Resource Planning Unit
02/06/2022	Ministry of Agriculture	Susana Tuivuya Tevita Natasiwai Timoci Bogidua	Head of Agricultural Trade
03/06/2022	Ministry of Agriculture	Sandeep Sharma	Regional Manager – Northern
03/06/2022	Attended Seminar at IUCN on Review of Fiji's EIA Guideline by Lavenia Tawake		
08/06/2022	Ministry of Agriculture	Amena Banuve Ami Sharma	Principle Research Officer: Agronomy Principle Research Officer: Chemistry
08/06/2022	Attended World Oceans Day Celebration, Ucunicanua, Verata Taileu LMMA Advisor		
	SPREP LMMA IAS (USP) FLMMA WWF CI CI CI Private Private Village rep Village rep	Sefa Nawadra Alifereti Tawake Isoa Korovulavula Isoa Koroiwaqa Francis Areki Semisi Meo Tomasi Tikoibua Apisai Bogiva Randy Thaman Kesai Tabunakai Pio Radikedike Silvio Vueti	Director General LMMA Adviser Director Director Country Manager Marine Program Manager Technical Officer Technical Officer Consultant Consultant Local fisherman Local fisherman

Annex 1 – Stakeholders consulted (Continued)

Date	Organisation	Person	Designation
	District rep	Silvio Tawake	Mata ni Tikina
28/06/2022	Macuata Coastal Fisheries Stakeholders	Kalivereti Vuakatagane Jone Tagime Elia Tabunaura Reapi Tinai Ruci Kere	Fisherman Fisherman Fisherman Middleman Middleman
09/06/2022	Lami Kava	Edward Hoerder Donny Yee	General Manager Owner
10/06/2022	Conservation International	Semisi Meo Tomasi Tikoibua Apisai Bogiva	Marine Program Manager Technical Officer Technical Officer
11/06/2022	Gold Hold Seafood	Richard Du	Director
11/06/2022	Tamata's Seafood	Laitia Tamata	Director
12/06/2022	CChange	Alumeci Nakeke	Communication lead
15/06/2022	ITaukei Land Trust Board	Josua Waqanivalu	Environmental Officer, Land Services
16/06/2022	PHAMA PLus	Navi Tuivuniwai Semi Siakimotu	National Facilitator – Fiji Regional Environmental Officer (Kava adviser)
23/06/2022	Kava Focus Group Meeting at IUCN		
	Biosecurity Authority of Fiji	Surend Pratap	Acting CEO
	Biosecurity Authority of Fiji	Nitesh Dayi	
	Ministry of Agriculture	Dr Rohit Lal	Principal Research Officer
	Ministry of Agriculture	Elisha Mala	
	Ministry of Agriculture	Solomoni Nabaunavui	Sustainable Land Management
	Rabi Kava	Frank Singh	Rep
	Gau Kava Farmers	Tevita Seru	Rep
	Kadavu Provincial Council	Malakai Masi	Chair
	Kadavu Lava	Roko Seru	Rep
	NatureFiji Mareqeti Viti	Nunia Moko	Director
	IUCN	Ken Kassem	Head Strategic Partnerships
	Ministry of Trade and Commerce	Deepika Singh	Senior Trade Economist
	Ministry of Environment	Krishneel Nand	Senior Environmental Officer
	Fiji Crops & Livestock Council	Kini Salabou	Rep
	Deborah Sue	Ministry of Forestry	Director Research

Annex 1 – Stakeholders consulted (Continued)

Date	Organisation	Person	Designation
23/06/2022	Coastal Fisheries Focus Group Meeting at IUCN		
	Women in Fisheries Network	Alani Tuivuderu	Director
	WWF	Francis Areki	Head Conservation
	Conservation International	Tomasi Tikoibua Apisai Bogiva Akuila Yacadra Isimeli Loganimoce	Technical Officer Technical Officer Technical Officer Gender Officer
	Gau Fishermen Assoc	Tevita Seru	Community Leader
	Kadavu Prov. Council	Malakai Masi	Chair
	Kadavu Kava	Roko Seru	Rep
	NatureFiji Mareqeti Viti	Nunia Moko	Director
	IUCN	Ken Kassem	Regional Programme Coordinator
	Wildlife Conservation Society	Paul van Nimwegen	Fiji Country Director
	NatureFiji MaraḡetiViti	Nunia Moko	Director
	Suva City Council	Arvin Ram	Environment Officer
	Suva City Council	Kalivati Bonu	Enforcement Officer
	Ministry of Fisheries	Aporosa Rabo	Senior Fisheries Officer
	Ministry of Environment	Krishneel Nand	Senior Environment Officer
	Change Pacific	Maciu Bolaitamana	Project officer
	Fiji Locally Managed Marine Areas Network	Isoa Koroiwaqa	Director
	Ministry of Fisheries	Aporosa Rabo	Senior Fisheries Officer
	Ministry of Environment	Krishneel Nand	Senior Environment Officer

Annex 2 – Contact details for the top five kava exporters

Date	Organisation	Person	Designation
Green Gold Kava Dealers Pte Limited	greengoldkava@gmail.com	Lot 6, Mizpha Avenue, Naqere, Savusavu, Fiji	8853441 8697106
South Pacific Elixirs Limited t/a Fiji Kava	Dharmendar@fijikava.com	Robbies Lane, Levuka, Ovalau	8084954
Lami Kava	sales@lamikava.com.fj admin@lamikava.com	Lot 5, Qaraniki Subdivision, Lami	3361409 8914113 8981284
Twins Kava Dealers	twinskavadealers3@gmail.com	Lot 8 Naitata Road Navua	9300255
Raghwanand Kava Supplies Company	nandjiten@yahoo.com	Votua, Ba, Fiji	9248758

Source: Ministry of Agriculture

Annex 3 – Contact details for the top fifteen kava farmers

Division	Province	Registered Name of Group	District	Name of Farmer	Phone Contact	Sum of Quantity Planted
Eastern	Lau	Delainasau Farmers Group	Moala	Seremaia	7872853	817
Eastern	Lau	Uciwai Farmers Group	Moala	Seru	7382059	741
Eastern	Lomaiviti	Delaikorolevu Yaqona & Dalo Project	Lovoni	Paula	9709557	1000
Eastern	Lomaiviti	Lebaivalu Clusters	Cawa	Aminiasi Vito	2383954	2000
Northern	Cakaudrove	Koronatoga Village Beef Development Project	Navatu	Isoa	8094071	1500
Western	Nadroga/ Navosa	Mare Farmers Group		Etuate	2172068	1000
Western	Ra	Bure Yaqona Cluster	Bureivanua	Adre	2163558	1500
Western	Ra	Bure Yaqona Cluster		Amasai	2163558	1000
Western	Ra	Bure Yaqona Cluster		Iliesa	2163558	1800
Western	Ra	Bure Yaqona Cluster		Poasa	2163558	3000
Western	Ra	Bure Yaqona Cluster		Salesitino	2163558	1000
Western	Ra	Bure Yaqona Cluster		Seremaia	2163558	1000
Western	Ra	Bure Yaqona Cluster		Seru	2163558	1500
Western	Ra	Bure Yaqona Cluster		Tevita	2163558	1000
Western	Ra	Koroniyau Youth Club	Saivou	Simione, Samuela K, Samuela R, Sainivalati, Sireli, Ulaiasi, Laisenia V, Solomon	9639717/ 9571940	3536

Source: Ministry of Agriculture

Annex 4 – Contact details for coastal fisheries exporters

Coastal fisheries resources	Unit	Total
Richard Du of Gold Hold Seafood Ltd	Labasa and Suva	2754239
Tamata's Seafood	Labasa and Suva	9992683
Babasiga Seafood	Laqere Market, Suva	9414730
Ocean Express Fiji	National	7540972
Oceanfest Pte Ltd	Suva	8423828
Fish Scales	Suva	2097634
TAH's Fish Sale	Lautoka	8620548
Sweveen Seafood	Nasinu, Suva	8609148

Annex 5 – Contact details for key coastal fishers

Division	Province	Region/Association	Fishers	Contact
Northern	Macuata	Cakaulevu Fishermen Cooperative	Kalivereti Vuaka	9585841
Northern	Macuata	Qoliqoli Cokovata Representative	Tumara Lautiki	9034309
Eastern	Kadavu	Kadavu Fishermen Association	Bola Waqalevu	8467442
Eastern	Lau	Lakeba Fishermen Rep	Frank	7227710
Western	Ba	Nadi Fishermen Association	Usman Ali	9973229
Western	Ba	Tavua Qoliqoli Rep	Kiti Ratuba	9788841

Annex 6 – Potential application of GIS and remote sensing in quantifying deforestation linked to kava production for setting area based targets and monitoring progress.

Remote sensing applications based on satellite imagery have advanced to a point where they can be effectively applied to support the quantification of forest loss and the setting of area based targets, as well as for monitoring progress towards achieving these targets. This is relevant for the setting and monitoring of 'voluntary commitments' with regard to deforestation linked to agriculture in Fiji.

The Global Forest Change platform is one such application that has potential in this regard¹³⁰. Information on the database is updated annually based on the average of numerous satellite images taken during the year. Spatial data on forest loss is available from 2000 to 2021. The platform also incorporates data on forest gain, although this is currently only available from 2000 to 2012. Most significantly from a forest management perspective, the platform also provides layer data on net forest loss or gain.

Data can be downloaded in the form of .SHP files for use in PC-based GIS systems, allowing GIS technicians to calculate areas (hectares) of net forest loss or gain, in addition to displaying them. Figure 26 below provides a screenshot of the web-based platform.

130 Another is <https://esa-worldcover.org/en>

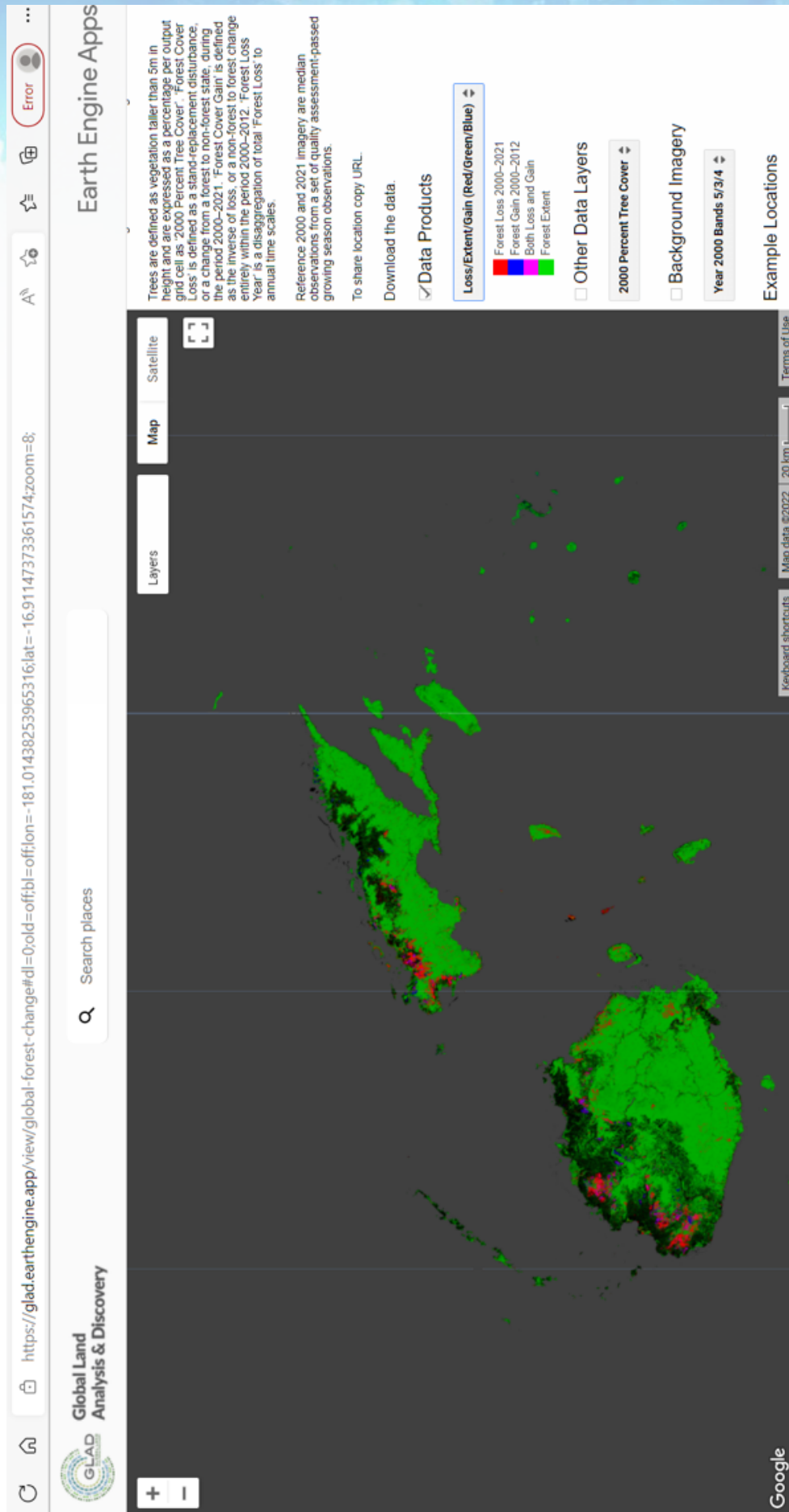


Figure 26 – Screenshot of the Global Forest Change web platform

BIODEV2030 proposes a focus on five priority Key Biodiversity Areas which have been selected from the forty-four terrestrial Key Biodiversity Areas in Fiji based on their overlap with known kava production 'hotspots' (refer Section 2.3 of the main report). GIS layers of Fiji's Key Biodiversity Areas are available from BirdLife International and the Ministry of Environment. It is a relatively simple procedure to overlay the Key Biodiversity Areas onto forest change maps generated by Global Forest Watch as illustrated in Figure 27.

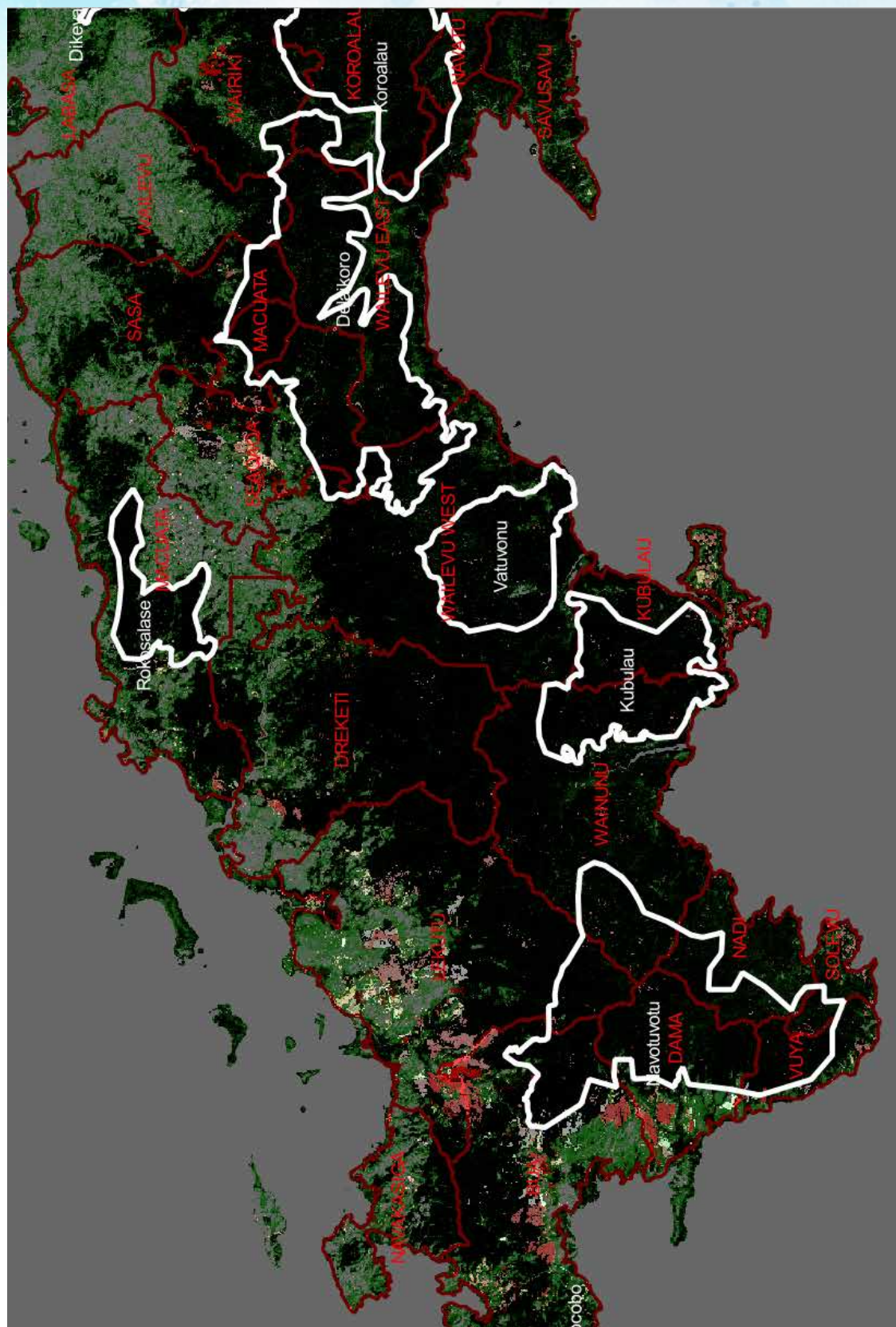


Figure 27 – Global Forest Change base map with Key Biodiversity Areas overlay

Having done this, it becomes possible to focus in on the priority Key Biodiversity Areas and obtain a clearer picture of the dynamics of forest change over time in these areas, e.g. forest patches appearing, or forests becoming fragmented; both drivers of biodiversity loss. While it is unlikely that the causes of any net loss of forests observed can be determined from the satellite imagery, in the case of Fiji we know that is most likely a result of logging or agriculture. The exact drivers would need to be established on the ground through a process of ‘ground-truthing’. Through ‘ground-truthing’ it may be possible to link certain attributes on the satellite images to specific activities or drivers, which would greatly enable the functionality of the GIS application. Given their representation on the ground, extension workers from the Ministry of Agriculture and the Ministry of Forestry would be best suited to carry out the ground-truthing exercises, essentially recording whether the observed forest clearances in any particular area are attributable to logging or agriculture (kava, ginger, turmeric or taro cultivation). The Ministry of Agriculture’s intended investment in drones will provide additional and complementary means of data gathering.

For management purposes, it is further possible to overlay the boundaries of communal land-owning units (mataqalis), enabling the identification of mataqalis on whose land forest disturbance is observed using the Forest Watch time series remote sensing data (Figure 28). Once identified, the mataqalis can then be targeted for engagement by government authorities towards implementing better forest (and biodiversity) conservation land-uses or practices. For BIODIV2020, such engagements would enable discussions on ‘pledges’ or ‘voluntary commitments’ at the community level. They would also serve as a focus to look at alternative land uses for forest areas, such as payments for ecosystem services under REDD+, conservation leases and/or eco-tourism.

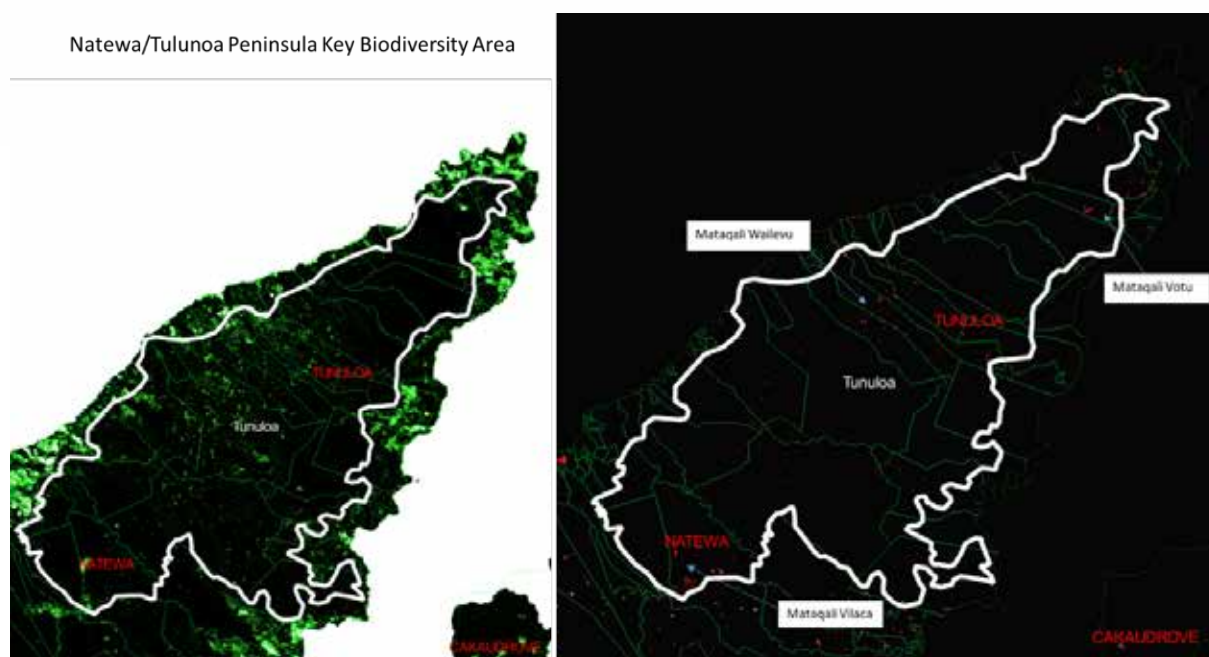
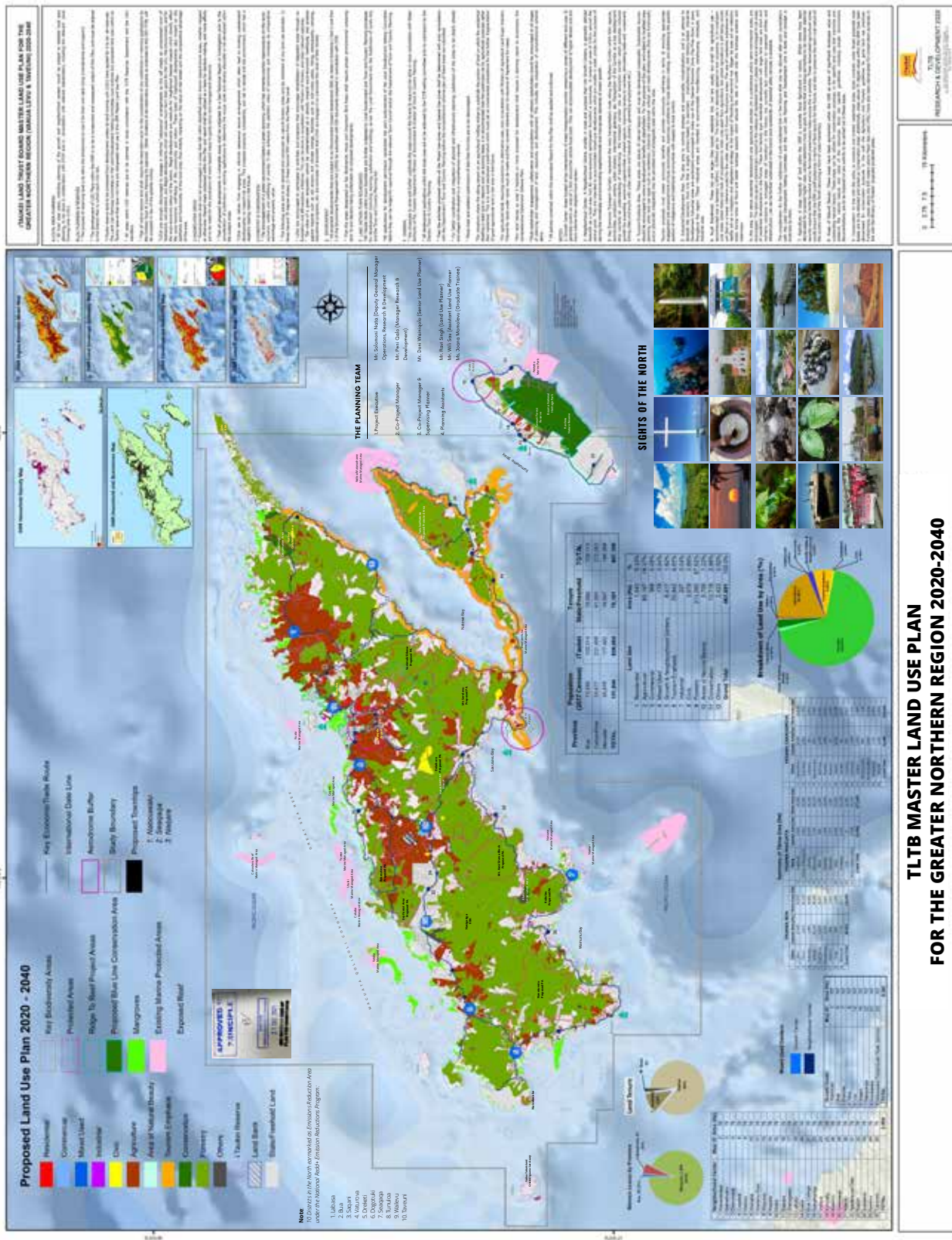


Figure 28 – Global Forest Watch base map with Natewa/Tulunoa Peninsula KBA and Mataqali boundary overlays. The red areas on the map on the right indicate areas of forest loss.

Other relevant and important sources of spatially-based planning are the Master Landuse Plans being developed by the iTaukei Land Trust Board (TLTB). TLTB has recently completed its Master Landuse Plan for the Greater North Region (Vanua Levu) (Figure 29) and is in the process of developing one for Viti Levu. It is notable that these land-use plans incorporate the Key Biodiversity Areas and that TLTB has adopted progressive policies to limit incompatible development in these areas, in line with the National Biodiversity Strategy and Action Plan and related conservation legislation and policies. The Master Landuse Maps are also available at the scale of districts, greatly enabling district level planning (Figures 30 and 31). With its mandated role of administering land leases on behalf of Fiji’s indigenous land owners, TLTB should be considered key partners in efforts to reduce the impact of kava farming on Fiji’s native forest and associated biodiversity.



TLTB MASTER LAND USE PLAN
FOR THE GREATER NORTHERN REGION 2020-2040

Figure 29 – TLTB Master Land use Plan for the Greater Northern Region (Source: TLTB)

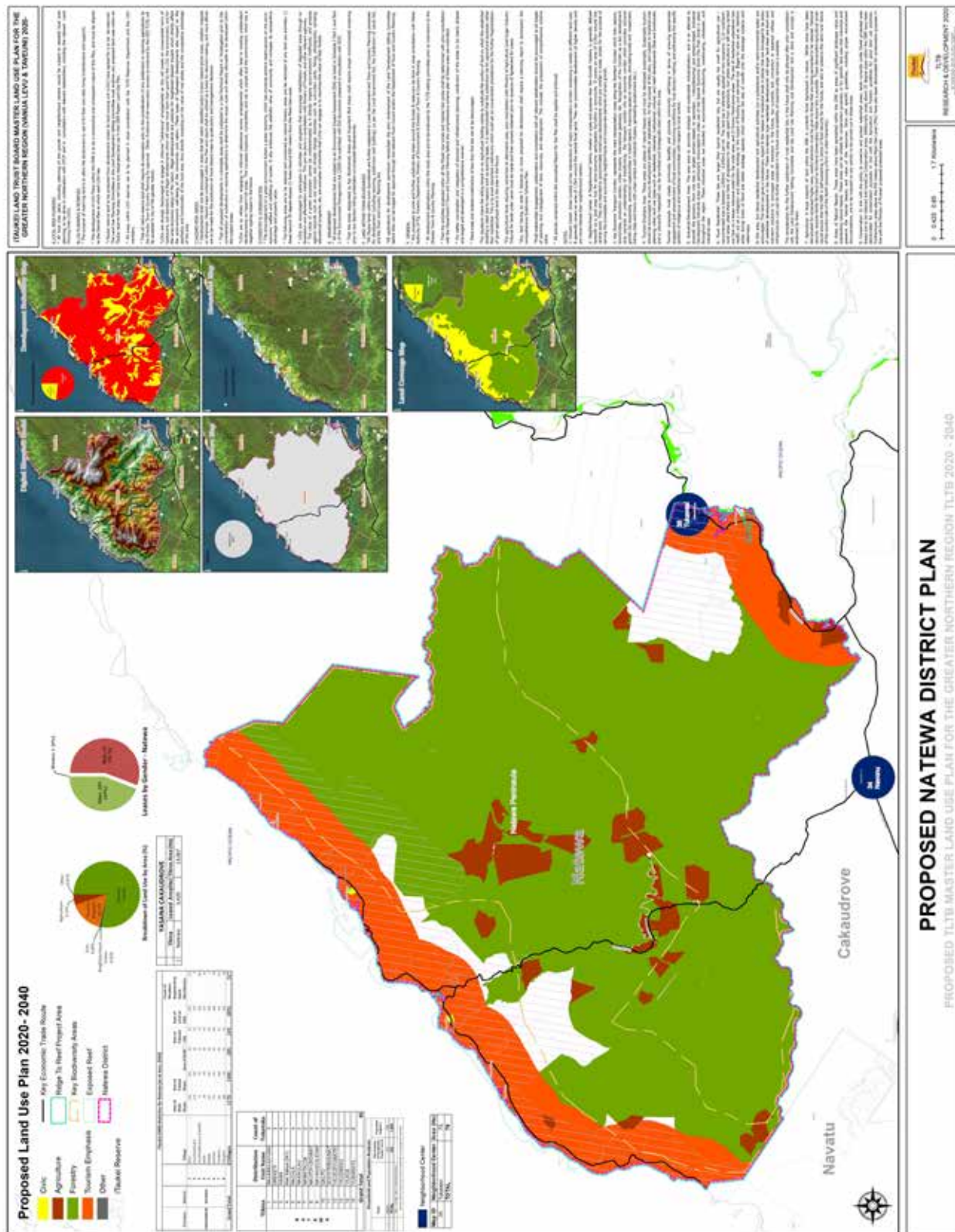


Figure 30 – Proposed Land Use Plan for the portion of the Natewa/Tulone Peninsula Key Biodiversity Area falling in Natewa district. Note areas of agriculture being proposed inside the Key Biodiversity Area.

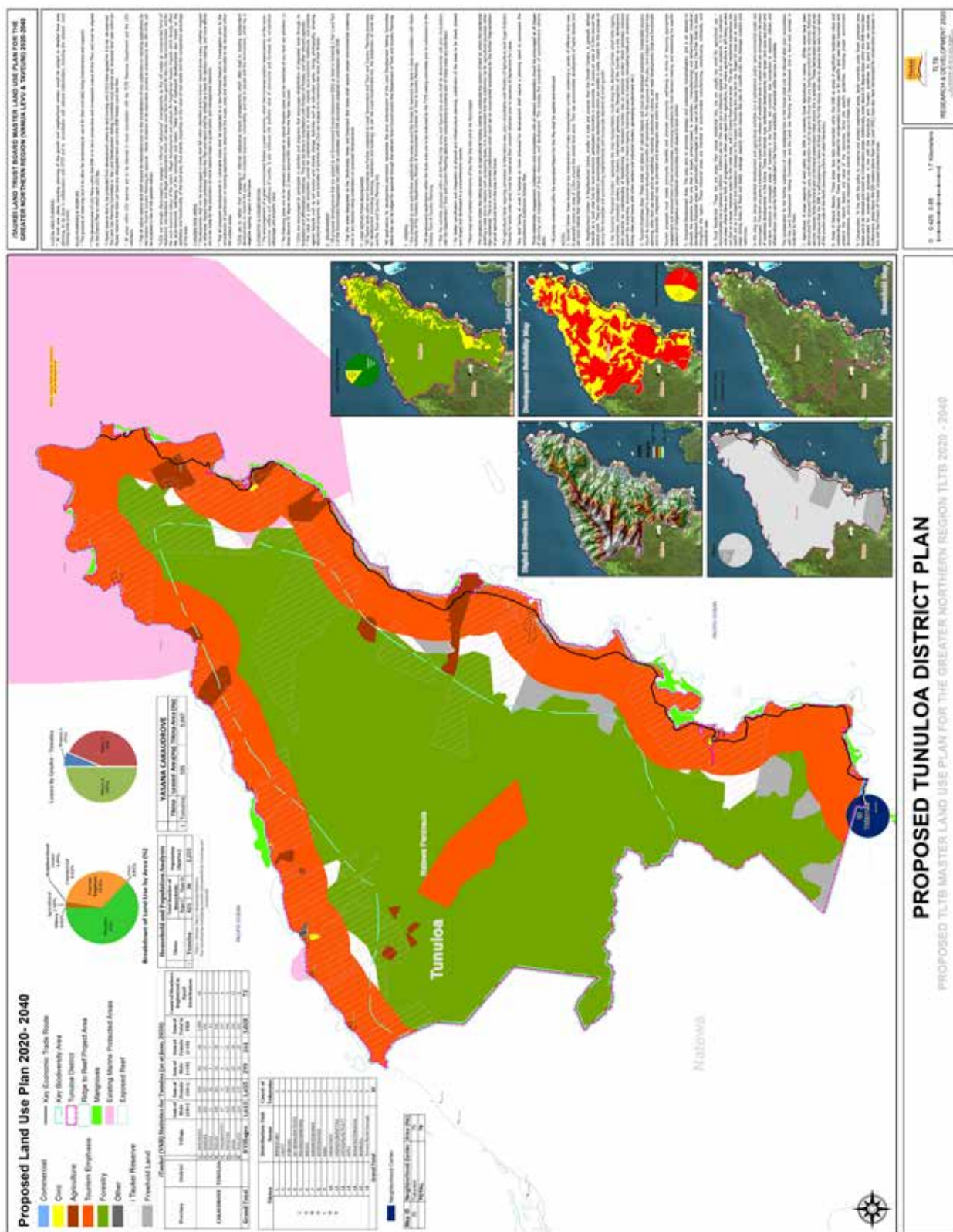


Figure 31 - Proposed Land Use Plan for the portion of the Natewa/Tulunoo Peninsula Key Biodiversity Area falling in Tulunoo district.



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